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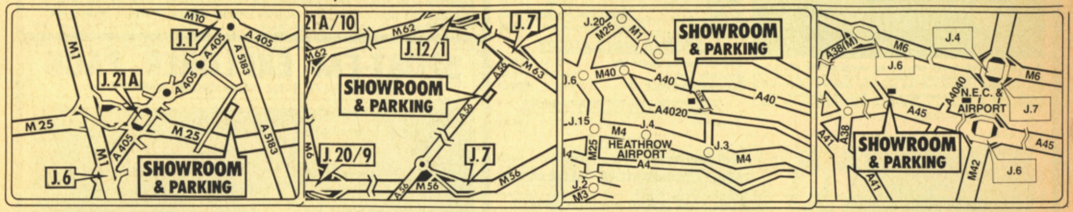

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Hey, Shopper – save ££££'s on any purchase – page 33

NEW COMPUTER EXPRESS

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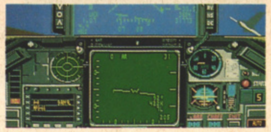


FALCON FOUL-UP

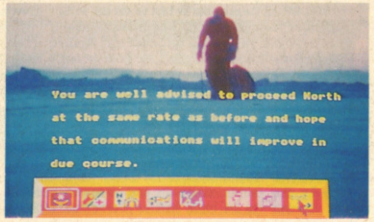
Mirrorsoft's big game hits trouble

– page 5

PRINTER POWER

We name the best buys

– page 15



You are well advised to proceed North at the same rate as before and hope that communications will improve in due course.

EXPLORE THE FUTURE

Virgin stakes out new territory with interactive videodiscs

– full details page 10

Sinclair breakthrough is "1000 times faster than hard disks"

SIR CLIVE'S COMPUTER REVOLUTION

– page 2

Amiga
Atari ST
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C64
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MSX
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PCW
QL
Spectrum

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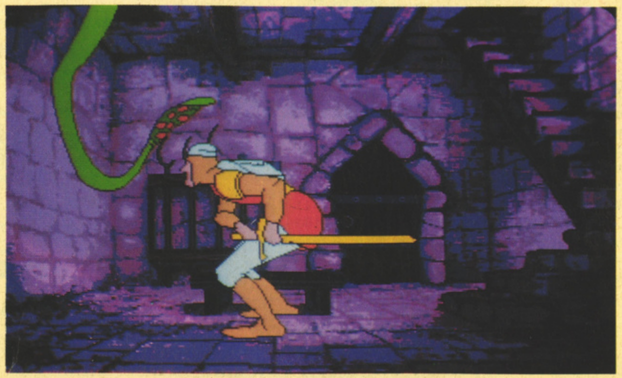


BEST GAME GRAPHICS EVER?

Astonishing conversion of Dragon's Lair reviewed page 28

Charts 3 • Letters 12 • Sugar 19 • Beginners 22 • Entertainment 24 • New games 26 • Tips 30 • Vouchers 33 • Columns 36 • PSsst! 46

SINCLAIR TO "TRANSFORM" COMPUTING

Electronics guru Sir Clive Sinclair last week outlined his plans to "transform" computing through a revolutionary new device which could put memory and processor chips together on the same unit.

Sinclair owns 20 per cent of Cambridge based Anamartic, which is preparing to launch the first waferscale integration (WFI) memory device. He claimed to *Express* that the new chip would "completely transform computing".

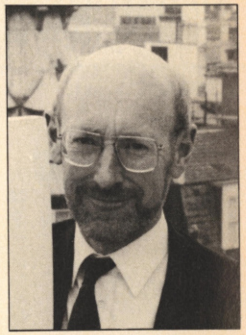
"You'll be able to use the waferscale instead of a hard disk," he said. "It will mean a one thousand times increase in the speed of memory access compared to current hard disk standards."

He added: "This has been seen as the holy grail of computing for the last twenty years. We at Sinclair Research have solved the problems through Anamartic."

Sinclair has been working on this project for some time. For the past two years he has been seeking funding for research and development. Anamartic itself is refusing to comment on developments, and on the suggestion that its gadgetry will be shown for the first time at the International Solid State Circuit conference in New York on February 15th. The firm is expected to show off a six inch diameter wafer which can store the equivalent of several hard discs.

Anamartic is currently in negotiation with high end hardware manufacturers. If successful, this technology will first be scooped up by the manufacturers of very expensive super computers and prices are likely to be high, just as transputer technology is available currently in machines such as the Atari Transputer Workstation. These cost a few thousand pounds but deliver performance equal to a machine ten times more expensive. Sinclair said that the home and small business ends of the market would be the last to benefit from such a development but acknowledged nonetheless that cheap computers would be able to use WFI in the near future.

When asked if WFI would make him very rich he replied: "I should very much expect so."


• Sinclair: Wafer scale revolution

Waferscale: chips with everything

Conventional chips are manufactured by setting layers on top of a wafer of silicon, slicing them up and throwing away the inevitable number which don't work. This is costly and wasteful but until now there has been no other reasonable alternative, because the more you try to cram on to a chip, the more certain it becomes that some part of it is going to fail, making the whole chip useless.

With WFI all the chips can be kept on the one wafer, effectively making one big chip. What makes WFI different is that most parts are built so they can work in more than one way. Special circuitry built into the wafer then tests the chip and can devise alternative routes round parts that don't work, increasing the proportion of working chips per batch. Testing the chip now involves just testing the special circuitry, saving the time taken to test each part of the wafer individually.

The intentional redundancy built into wafers mimics the way the human brain can work through different pathways, as when a stroke victim who has lost the power to speak can re-learn the skill using slightly different parts of the brain.

Extra speed and performance is attained because all the workings are on one chip, so the different chips don't need to spend time communicating with one another.

Hungerford memories prompt hasty Hewson name change

West country sensitivity to the Hungerford tragedy of 18 months ago has caused middling software house Hewson to change the name of its forthcoming shoot-em-up.

The firm was to call the game *Kalashnikov* – also the name of the gun used by killer Michael Ryan. However, one member of staff thought it would be seen as bad taste to launch a game with a name even remotely connected to the disaster in which thirteen people died. The game is now called *Custodians*.

"We're in Abingdon which isn't very far from Hungerford and we decided that it would be too close to home," offered a Hewson spokesperson. "One of the members of staff had strong views on the subject and we don't want to offend anyone."

***Custodians* should hit the streets later this month on the ST and Amiga priced at £19.99.**

Yet another Amstrad basher tries its hand

• Vision 286: Squaring up

Ambitious PC manufacturer Vision Technology has launched a sub-£1,000 hard disk 286 AT and is squaring up against the likes of Amstrad.

The firm's machines are sold here through Advent Computers which has only been in operation some six months. The low cost PC sector is packed with big name companies and new blood is rare. Firms which do venture into this area though invariably pitch themselves as 'Amstrad bashers'.

The £995 AT12/16D features an 80286 processor running at 12 MHz and 640K of RAM, 20 MB hard disk storage and a 1.3 MB floppy drive. An EGA monitor is also available costing an extra £200.

"Although they're very big, Amstrad are one of our main competitors," said Advent's John Williams. "We're up against a lot of muscle but the packs we offer are good. In six months they've become very popular," he claimed.

Advent is also planning to add another two machines to its current line-up of five. They are likely to be 386 PCs, although prices are as yet unknown.

Students wooed by Commodore

As first predicted in *Express* two months ago, Commodore has tied up a deal whereby students will be able to buy computers on tick.

The deal has been co-ordinated between the hardware manufacturer, the National Union of Students and the Midland Bank. A similar offer already exists for Amstrad and IBM computers.

Students can go into their campus NUS shop and order any Commodore computer. While at college they need only pay the interest – described by Commodore as "peanuts". Then, once they have graduated, they have to clear the outstanding balance.

Commodore is also bundling software for the special student deals. PCs will come with Logotron's integrated business package *Eight in One* which usually retails at £60. The Amiga will come with *Photon Paint* and business package *The Works* (usually priced at £100).

"We're tapping in to the guy who who wants to buy a computer but can't afford it," said Commodore's Peter Talbot. He also acknowledged the value of 'getting 'em in young'.

Meantime, Commodore is gearing up for a big business push at next month's *Which Computer?* Show. UK users are promised their first glimpse of the Amiga 2500 with AT bridgeboard and Unix card (*Express* 3). Which? is being held from February 21st to 25th at the NEC in Birmingham.

• A500: Within students' reach

Kids get Weird Dreams

Firebird's esoteric arcade adventure *Weird Dreams* is to become a regular feature of *Motormouth*, ITV's Saturday morning kids television show.

For the next seven weeks the game which has been praised for original graphics will be the vehicle for a competition. The winner of that will be off to Egypt for a free trip around the pyramids.

• Weird Dreams: Motormouth strikes again

In the special competition viewers are asked to write in and apply to play the game. A few are then called while the show is being aired. They are invited to answer general knowledge questions – the right answer propels the game's main character on to the next level.

Firebird's programmers have been working on *Weird Dreams* for the past few weeks in order to change it for *Motormouth*'s special version. Programmers have also been adding graphic displays of pyramids and the *Motormouth* logo.

In the past computer games have been featured heavily on Saturday shows such as *Get Fresh* which has used Rainbird's *Starglider* and Melbourne House's *Xenon*. *Weird Dreams* should be generally available by the end of February.

Rodime clashes with IBM over hard drive patents

Hard disk drive manufacturer Rodime is preparing to do legal battle with leading hardware companies including IBM.

The $160 million a year company claims that its 3.5 inch hard disk drive technology has been ripped off by the world's leading manufacturers of memory devices. Last November the US Patent Office re-issued Rodime's patent for the disk drives with new amendments; two months later the firm is looking for substantial damages.

The 3.5 inch hard drive market is said to be worth "thousands of milions" worldwide. Rodime admits that it did not invent the 3.5 inch size for disk drives but alleges that its technology has cropped up in competitors products. The 3.5 inch size relates to the actual drive inside the larger case.

According to Rodime an out of court settlement has already been reached with Miniscribe. However, it still plans to take on IBM, Western Digital, Seagate and others.

"Some of the original documents on their products had identical features to our products. They had clearly looked at our products," said Rodime's vice president of operations Gordon Wooley. "It goes far beyod the size of the disk, it has to do with the final product," he said.

He went on to claim that IBM and the other companies had knowingly used Rodime's technology but said that it is quite possible to produce 3.5 inch hard drives without infringing copyright.

IBM characteristically responded thus: "We are studying Rodime's claim but cannot comment because the case is in litigation." On the amount of damages Rodime expects to gain Wooley commented: "Today this is a booming market but it depends on the extent to which we can prove the case."

Freddie joins US Gold

Multi million pound software house US Gold has tied up the rights to spooky cult horror film Nightmare on Elm Street.

The Brummie firm is adding this to the already signed Michael Jackson film Moonwalker *and World Cup 1990. Meanwhile, Gold last week announced that it had sold more than £10 million worth of software between July '87 and August '88.*

Computing with Uncle Sam

Computer professionals looking for a new start can earn over £40,000 a year – if they're prepared to emigrate to the States..

The Americans are keen to get their hands on skilled British computer programmers and operators. According to the US Embassy in London computer professionals made up a significant proportion of those moving to the United States last year – second only to entertainers.

State-of-the-art software engineers can earn anything from $32,000 to $75,000 a year in a country where standards of living are higher than in Britain.

The US is short of competent engineers and although it is the most technically advanced country in the world, UK staff are regarded highly. "A three year programmer here is far better than a three year programmer in the US," claimed Roger Coggan, the UK manager of international recruitment agency IBS.

According to another recruitment agency though, the Americans won't hesitate to tell turkeys to get stuffed. "The US is not for wimps," said David Wallder of MH Recruitment.

Earthquake tragedy prompts Opus help

British PC manufacturer Opus has donated two machines to the Armenian Earthquake Appeal on the request of the Soviet government.

Two of the company's representatives were in Moscow at the time of the disaster to form the *International Computer Club* – a Soviet based organisation the nature of which is being kept under wraps. The Soviet government asked for computers so that donations could be collated and for future planning of the broken cities.

"With whole towns and much of the region's infrastructure destroyed by the earthquake we felt that our computers could play a vital role in planning," said an Opus spokesman. "It's glasnost all round."

Due to restrictions on technology from the West Opus could only send models of its low end PCIII. Opus is keeping tight-lipped on its involvement in the Moscow based *International Computer Club*. The spokesman claimed that it is being set up for educational purposes initially but conceded that "it may lead to further opportunities". Opus is believed to be the only British company represented and was invited directly by the Russians.

•Opus PCIII: Armenia bound

GAMES TOP TWENTY — FULL PRICE

1	1	Operation Wolf	*Spec, C64, CPC, ST, Amiga*	OCEAN
2	2	Robocop	*Spectrum, C64, CPC*	OCEAN
3	4	Afterburner	*Spectrum, C64, CPC, ST*	ACTIVISION
4	5	Thunder Blade	*Spectrum, C64, CPC, ST, Amiga*	US GOLD
5	3	Double Dragon	*Spectrum, C64, ST, Amiga*	MELBOURNE HOUSE
6	7	Falcon	*ST, Amiga*	MIRRORSOFT
7	8	R-Type	*Spectrum, C64, CPC, ST*	ELECTRIC DREAMS
8	6	Giants	*Spec, C64, CPC*	US GOLD
9	9	Football Manager 2	*Spectrum, C64, CPC, ST, Amiga, PC,*	ADDICTIVE
10	17	Return Of The Jedi	*Spectrum, C64, CPC, ST, Amiga*	DOMARK
11	11	Batman	*Spectrum, C64, CPC, ST, Amiga*	OCEAN
12	14	Last Ninja 2	*Spectrum, C64, CPC*	SYSTEM 3
13	13	Game Set and Match 2	*Spectrum, C64, CPC*	OCEAN
14	16	Pacmania	*Spec, C64, CPC, ST, Amiga, MSX*	GRAND SLAM
15	RE	Who Dares Wins 2	*Spectrum, C64*	ALLIGATA
16	12	Taito Coin-ops	*Spectrum, C64, CPC*	OCEAN
17	19	Supreme Challenge	*Spectrum, C64, CPC*	BEAU JOLLY
18	RE	Elite	*Spec, C64, CPC, ST, Amiga, PC, BBC, Elec, MSX*	FIREBIRD
19	RE	Four Soccer Simulators	*Spec, C64, CPC*	CODE MASTERS
20	22	Microprose Soccer	*C64*	MICROPROSE

GAMES TOP TEN — BUDGET

1	1	Joe Blade 2	*Spectrum, C64, CPC, BBC, C16, Electron*	PLAYERS
2	3	Bomb Jack	*Spectrum, C64, CPC, ST, C16*	ENCORE
3	15	Yogi Bear	*Spectrum, C64, CPC*	ALTERNATIVE
4	4	Through the Trap Door	*Spectrum, C64, CPC*	ALTERNATIVE
5	19	Leaderboard	*Spectrum, C64, CPC*	KIXX
6	7	Footballer Of The Year	*Spec, C64, CPC, Elec, BBC, Atari 8-bit, C16, MSX*	KIXX
7	14	Knightmare	*Spec, C64, CPC*	MASTERTRONIC
8	2	Ghostbusters	*Spectrum, C64, CPC, Atari 8-bit*	MASTERTRONIC
9	12	BMX Ninja	*Spectrum, C64, CPC*	ALTERNATIVE
10	6	Skooldaze	*Spectrum, C64*	ALTERNATIVE

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VIRGIN'S SECRET

Arcade machine with movie-quality graphics

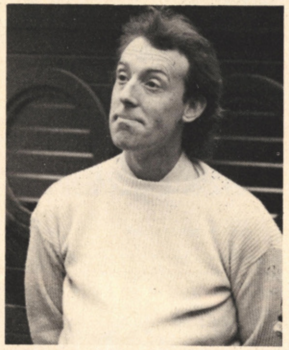
Virgin Publishing is developing an arcade machine which features real video pictures instead of computer generated graphics.

The game is based on a bobsleigh race and is being secretly put together by a team of software experts. But the project is still in its early stages. "The technology is still far from there," said Virgin/Mastertronic boss Nick Alexander.

If successful the machine may be placed into entertainment arcades as the first 'real pictures' coin-op. This could happen next year at the earliest.

The system works on laser disks – a technology which Virgin has been using for some time. The company believes it can bring out such a machine at a quarter of the price of the *Dragon's Lair* coin-op which cost arcade operators a mighty £10,000.

"It's not intended as a coin-op as yet because it's still very much in an experimental stage," added Alexander. "It's not an enormous investment for us, but it's a reasonable amount."



• Alexander: Movie-style arcade game

Virgin already has interests in the arcade market having acquired coin-op firm Arcadia through its takeover of Mastertronic last year. The bobsleigh project will also be transferred to burgeoning home technology Compact Disk Interactive (CDI) when that finally arrives.

Training: the one-to-one approach

Computer training has always been a matter for much debate but one new company reckons it's come up with the best solution yet.

Instead of frantic three day training marathons Complete Computer Service is offering one-to-one training for a few hours a week. These intense sessions, based on the same philosophy as piano lessons, cost anything from £12 an hour. They're being aimed directly at the small businessman baffled by new technology.

CCS concentrates mainly on the PC and PCW with special training on *LocoScript* and other word processors as well as databases, spreadsheets and accounting packages.

"There is a real need for training because there's such an enormous amount to learn. The machines are so powerful that people are overwhelmed by them," commented boss Tony Reese. "I prefer to teach in one or two hour sessions."

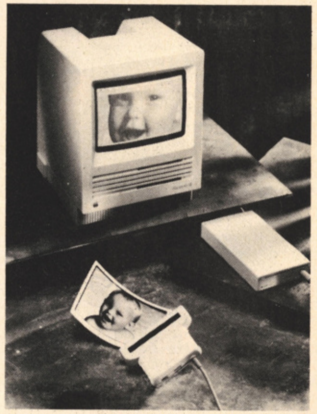
Reese is based in Bristol and his background is as a programmer and analyst for Rolls Royce. More info on 0272 682321.

Scanner in the works

For the desktop publisher looking for a low-cost method of importing pictures comes the ScanMan handheld scanner for the Apple Macintosh.

Priced at £395, less than a quarter the price of most existing Mac scanners, it can digitise photographs at up to 400 dots per inch. Manufacturer Logi UK claims it's the first handheld scanner for the Mac, which is widely regarded as the best machine for DTP.

"It's ironic that the Apple range, which has been so popular for Desktop Publishing, has not had a handheld scanner," observed Logi UK's Nick Pearson.



• ScanMan: Mac first?

INGRID TAKES BACK SEAT AS LEVEL 9 TURNS RISQUÉ

Tolkienesque adventure games publisher Level 9 is soon to make its move into more sophisticated territory.

The firm is best known for traditional adventures, and recent titles like *Ingrid's Back* have only slightly varied the theme. But now it is planning to moving out of middle earth and into high society with up to date and risqué plots. Level 9 appears to have been inspired by games such as Activision's *Leisure Suit Larry* which have made headlines due to their modern-day scenarios and sometimes adult humour.

• The Level 9 team – turning their backs on Ingrid?

"We've developed a system which will allow us to do these games quite easily," explained partner Pete Austin. "There'll be a lot of 3D graphics, animation and humour."

But Level 9 doesn't plan to leave behind its goblinesque roots completely: "We'll try and keep the two together unless one becomes dominant". No details are available on its first new-approach adventure – which will in any case be preceeded by a more traditional offering.

Scapeghost should arrive before Easter and features a ghoul coming to terms with his ability to walk through walls and his inability to do the one thing adventurers love most – picking up objects.

SOFTWARE? MAIS NON

Software has been banned from France. Not the actual thing itself, you understand, but the word.

French language purists are desperately blocking their Gallic ears to new words from English speaking countries. You're not supposed to listen to a walkman in Paris, for example, but a baladeur, thanks to the Académie Francaise, the guardian of the French language. The latest offending bon mot is "software", henceforth to be replaced by "logiciel".

C'est la vie.

EASY PC ADD-ONS

PC owners baffled by the armada of add-ons and peripherals available might fancy taking the time out to browse through The PC Upgrade Handbook.

Published by Sigma at £12 it features hints on low cost upgrades from adding extra memory to local area networks.

NEW COMPUTER EXPRESS

OUR OPINION

Waferward?

Has Sir Clive done it again? Wafer Scale technology has been everyone's dream for a decade now, and if Anamartic really have produced a viable product they will have taken a significant lead in the race to the next type of computer.

But who will benefit? You won't get wafers in home machines for ten years yet. Just like the transputer, such technology will only reach users of big, costly systems initially. For the moment the alternative approach to upgrading specifications as used by the ST, Amiga, Archimedes *et alia* will dominate the home user end of the market. Don't throw away your machine yet.

Loan wolf

Commodore's scheme giving students cheap micros will cheer up a lot of students, but can be seen two ways. The generous view says it's encouraging that the bank now appears to see the micro as a legitimate study and work tool, not just an expensive toy that you play games on instead of going to lectures. The cynical view says Commodore are just buying off students early and looking forward to their future fat salaries going into Commodore's coffers.

Either way you'll see a lot of Amiga software in the campus shops. And a lot of empty lecture halls.

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FALCON FLIES INTO TROUBLE ON ST

Mirrorsoft's high flying aircraft simulation *Falcon* has run into compatibility problems on the Atari ST.

The program – currently at number six on the all formats chart – will not run on some of the machines. Mirrorsoft says that its "sophisticated" protection for the game meant that a small number of machines would refuse to boot it.

The firm was keen last week to assure all users that the problem had been dealt with quickly.and that any one experiencing problems should send their disks in for modification "within a day". It said there had been only a small number of complaints.

Atari has slightly changed its drives for the ST six times since the machine was launched. Despite the changes they stayed inside a specification which all software developers recognise. However, each drive has its own individual quirks.

Mirrorsoft's protection was based on reading certain tracks on the disk and then hopping back to those tracks at the start of the game itself. However, some of the ST drives will not read the higher end tracks such as 82 and 83 which Mirrorsoft had depended on. Thus the game would not start.

"Atari ran out of its disk drives for a certain period and so found a replacement," explained Mirrorsoft's Tom Watson. "Normally there would not be any difference except in certain environments such as protection." The firm has tweaked all copies of the game so that the protection now reads compatible tracks.

Not surprisingly Atari had a different perspective. "Not all drives can get up to those track numbers but that's beyond the specification anyway," offered a spokesman. "We've had about six different drives but as far as software development goes that doesn't matter because they're all within our ordered spec.

"Problems will occur if people start basing their protection on the individual quirks of one type of disk drive. If that works on one it doesn't mean it'll work on them all," he said.

Despite this problem Mirrorsoft is toasting the success of the program. Considering it is only available for PC, ST and Amiga the title has performed well in a chart dominated by big Christmas multi format arcade releases.

FALCON
THE F-16 FIGHTER SIMULATION

• Falcon: Copy protection foulup

PCW users slow on comms takeup

More PCW owners should be getting their hands on modems and logging onto bulletin boards.

That's the view of David Axford, head of the PCW File User group. He has recently been forced to close down the group's newsletter due to "financial burdens" but has re-opened the mag on a bulletin board. Unfortunately, the proportion of modem toting PCW owners amounts to less than one per cent.

"People don't seem to realise the advantages of a modem. For that investment you can have access to many PCW public domain programs as well as all the tips and news," explained Axford.

His bulletin board is included on the BOOG network and is "absolutely free apart from the cost of the call". Axford was forced to close down the £18 a year monthly mag after its readership dipped from 500 to 150. "It was becoming too expensive," he said.

Axford can be contacted on 0428 56438.

PC2000 IN THE CLUB

The Amstrad User Club is planning to form a "Gold Card" club for PC2000 users.

The 'corporate club' will offer training, software, technical support, a bulletin board and discounts for shows. It's believed that Lazahold, the company behind the nationwide club, is also secretly planning to launch its own Commodore club.

How to run a business on a QL

Hitchin based SD Micro-systems is to launch a QL version of its integrated accounts package.

The firm limits its activities to the QL and CPC – the package is already available on the latter. "We regard them as the true home professional computers," said boss Steve Denson. "They're the best for small businesses. Something like the PCW is OK but it runs out of puff on more complicated business applications."

The Stock Accounts System costs £39.95 and includes invoice produc-tion, stock adjustment and sales ledger. No plans are afoot to transfer the program to mainstream formats such as the PC.

How to automate an ST

Public Domain specialist South West Software Library is offering an ST macro-generation program which can record the user's keyboard and mouse activities.

The sequence can then be played back at the touch of a button. SW suggests that this can simplify tedious tasks such as sorting out a database or printing reports. The firm is confident there is no commercial program like it in the UK.

PD software is non copyrighted and often placed in the Public Domain by programmers bound under contracts not to produce commercial software.

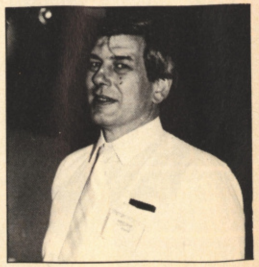
Retrace, like all SW PD software, costs £3.00. The company recently added another 40 disks of ST applications, utilities and games to its catalogue. More details from The South West Software Library, PO Box 562, Wimborne, Dorset BH21 2YD.

Amstrad man goes it alone

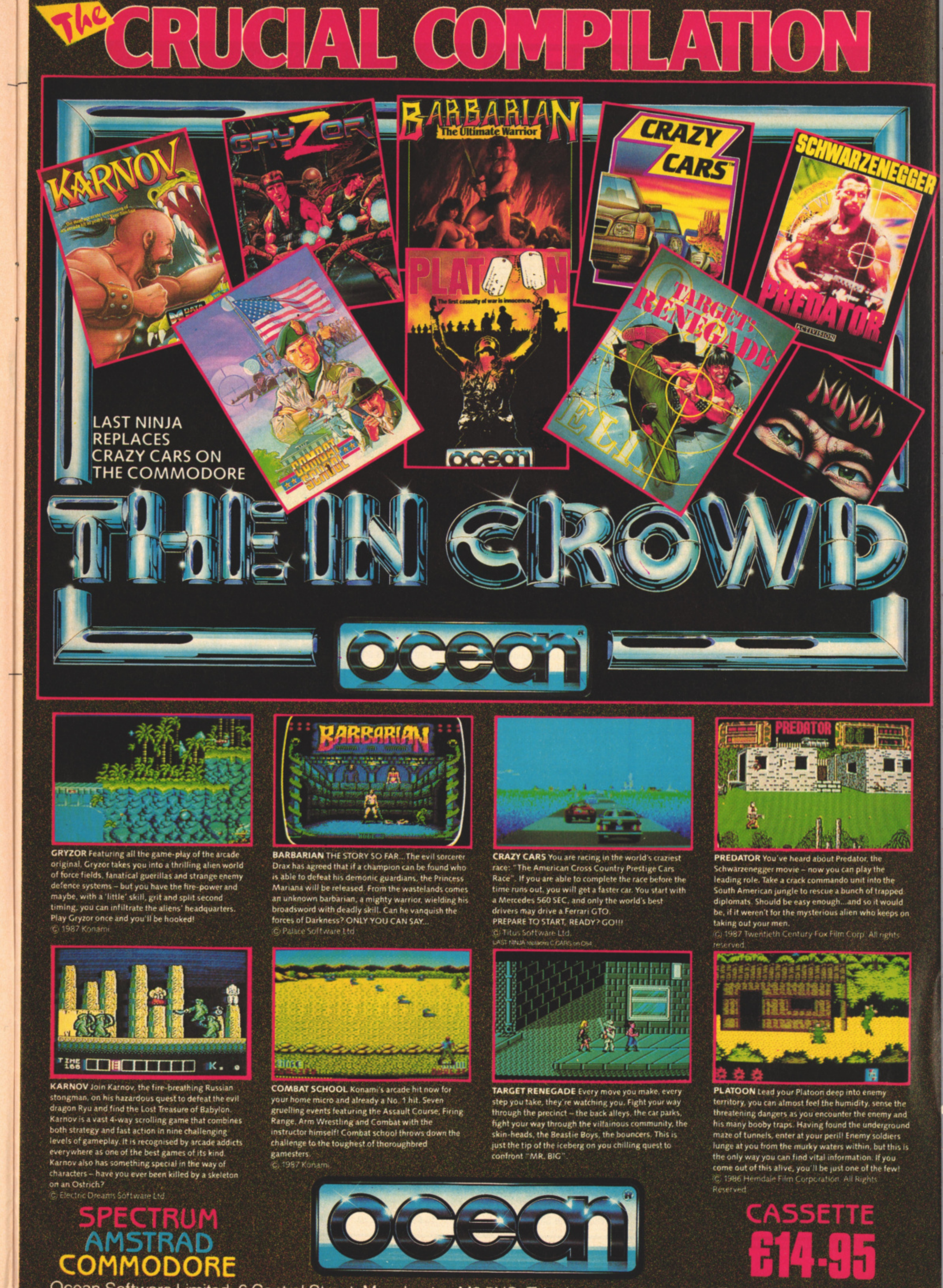
Former Amstrad software sales manager Mike Mordecai has launched his own distribution company AV Marketing.

The firm will distribute, among other things, Amstrad's own products. He told Express : "I felt it was time I tried launching out on my own. If I put in the same effort now as I have done during my time at Amstrad, I'm sure the company will be a big success."

Earlier reports suggested that Mordecai had been made redundant by Amstrad. In fact he resigned from the company during the same period that a string of redundancies was enforced.



• Mordecai: Launch



GRYZOR Featuring all the game-play of the arcade original, Gryzor takes you into a thrilling alien world of force fields, fanatical guerillas and strange enemy defence systems – but you have the fire-power and maybe, with a 'little' skill, grit and split second timing, you can infiltrate the aliens' headquarters. Play Gryzor once and you'll be hooked!
© 1987 Konami

BARBARIAN THE STORY SO FAR... The evil sorcerer Drax has agreed that if a champion can be found who is able to defeat his demonic guardians, the Princess Mariana will be released. From the wastelands comes an unknown barbarian, a mighty warrior, wielding his broadsword with deadly skill. Can he vanquish the forces of Darkness? ONLY YOU CAN SAY...
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CRAZY CARS You are racing in the world's craziest race: "The American Cross Country Prestige Cars Race". If you are able to complete the race before the time runs out, you will get a faster car. You start with a Mercedes 560 SEC, and only the world's best drivers may drive a Ferrari GTO.
PREPARE TO START, READY? GO!!!
© Titus Software Ltd.
LAST NINJA replaces C.CARS on C64

PREDATOR You've heard about Predator, the Schwarzenegger movie – now you can play the leading role. Take a crack commando unit into the South American jungle to rescue a bunch of trapped diplomats. Should be easy enough...and so it would be, if it weren't for the mysterious alien who keeps on taking out your men.
© 1987 Twentieth Century Fox Film Corp. All rights reserved.

KARNOV Join Karnov, the fire-breathing Russian stongman, on his hazardous quest to defeat the evil dragon Ryu and find the Lost Treasure of Babylon. Karnov is a vast 4-way scrolling game that combines both strategy and fast action in nine challenging levels of gameplay. It is recognised by arcade addicts everywhere as one of the best games of its kind. Karnov also has something special in the way of characters – have you ever been killed by a skeleton on an Ostrich?
© Electric Dreams Software Ltd.

COMBAT SCHOOL Konami's arcade hit now for your home micro and already a No. 1 hit. Seven gruelling events featuring the Assault Course, Firing Range, Arm Wrestling and Combat with the instructor himself! Combat school throws down the challenge to the toughest of thoroughbred gamesters.
© 1987 Konami.

TARGET RENEGADE Every move you make, every step you take, they're watching you. Fight your way through the precinct – the back alleys, the car parks, fight your way through the villainous community, the skin-heads, the Beastie Boys, the bouncers. This is just the tip of the iceberg on you chilling quest to confront "MR. BIG".

PLATOON Lead your Platoon deep into enemy territory, you can almost feel the humidity, sense the threatening dangers as you encounter the enemy and his many booby traps. Having found the underground maze of tunnels, enter at your peril! Enemy soldiers lunge at you from the murky waters within, but this is the only way you can find vital information. If you come out of this alive, you'll be just one of the few!
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Seven Cities of Gold	14.99	10.25
ShadowGate	24.99	16.50
Sidearms	19.99	16.00
SideWinder	9.99	7.00
Silent Service	24.99	16.50
Skychase	19.99	13.50
SkyFox II	24.99	17.50
Sorcery Plus	19.99	13.50
Space Racer	19.99	13.50
SpeedBall	24.99	16.50
Spidertronic	19.99	13.50
Spitting Image	19.99	13.50
Star Glider 2	24.99	16.50
Star Wars	19.99	13.50
StarFleet 1	24.99	17.50
Starray	24.99	16.50
Strike Force Harrier	24.99	16.50
Strip Poker II Data Disc 1	9.99	7.00
Strip Poker II	14.99	10.25
Sub Battle Simulator	24.99	19.50
Summer Olympiad	19.99	13.50
Super Six (Compilation)	24.99	16.50
Tanglewood	19.99	13.50
TechnoCop	19.99	16.00
Terrapods	24.99	16.50
Test Drive	24.99	17.50
Tetraquest	19.99	13.50
Thexter	24.99	16.50
Three Stooges	29.99	19.50
Thunder Blade	24.99	19.50
Time & Magik	19.99	13.50
Time Bandits	19.99	13.50
Track Suit Manager	19.99	13.50
Tracker	24.99	16.50
Triad (Compilation)	29.99	19.50
Trivial Pursuit (New Beginning)	19.99	13.50
Turbo Cup	19.99	13.50
T.V. Sports Football	29.99	19.50
U.M.S	24.99	16.50
Ultima III	24.99	16.50
Ulitma IV	24.99	16.50
Uninvited	29.99	19.50
Vectorball	24.99	16.50
Virus	19.99	13.50
Wanted	19.99	13.50
Warlocks Quest	19.99	13.50
Way of the Little Dragon	14.99	10.25
Whirligig	19.99	13.50
Wizard Warz	24.99	16.50
Wizzball	24.99	16.50
World Tour Golf	24.99	17.50
Zero Gravity	19.99	13.50
Zoom	19.99	13.50
Zynaps	19.99	13.50
Alien Strike	24.99	12.50
Black Shadow	24.99	12.50
Blast Ball	9.99	5.00
Borrowed Time	24.99	12.50
Brainstorm	9.99	5.00
Chubby Gristle	19.99	11.50
Cougan's Run	14.99	7.50
Diablo	19.99	10.00
Ebonstar	24.99	13.50
Elf	14.99	8.50
Extensor	9.99	5.00
Eye	14.95	8.50
Fireblaster	9.99	5.50
FlightPath 737	9.99	5.50
Footman	24.99	12.50
Fortress Underground	14.99	8.50
Frostbyte	14.95	8.50

Galactic Invasion	24.99	12.50
Grand Slam Tennis	14.99	8.50
Iridion	19.99	11.50
Jump Jet	14.95	7.50
Leviathan	19.99	11.50
Mach 3	19.99	11.50
MindFighter	24.99	14.50
MindShadow	24.99	12.00
Moebius	24.99	13.50
Ogre	24.99	13.50
Passengers of the Wind	24.99	14.50
Pink Panther	19.99	11.50
Plundered Hearts	29.99	16.50
Protector	9.99	5.50
RoadWars	19.99	10.00
Rockey	9.99	5.50
Sacrophaser	14.99	8.50
Seconds Out	19.99	10.00
Slaygon	19.99	10.00
Space Station	9.99	5.50
Starways	19.99	10.00
Strange New World	19.99	10.00
Strip Poker	9.99	6.00
Tetris	19.99	11.50
Tracers	24.99	14.50
Vampire Empire	19.99	11.50
Wall	14.99	7.50
Warzone	9.99	5.50

Special offer stands while current stocks last please phone for availability

Business Software

AC/Basic	195.99	132.50
Adrum	39.99	32.50
Animator/Images	103.50	81.50
Art Parts 1	9.99	7.50
Art Parts 2	9.99	7.50
AudioMaster	46.00	32.00
Award Maker 2	39.99	29.50
Aztec C Professional	199.99	139.50
B.B.S.P.G. Coms Pack	119.99	96.50
Butcher II	29.99	21.50
C. Library	79.99	60.50
Calligrapher	89.99	72.50
C.L.I. Mate	39.99	29.50
Comic Setter	69.99	50.50
Comic Setter Librarys (Each)	24.99	18.50
Critics Choice	149.99	112.00
Data Retrieve	57.99	42.50
Deluxe Music Con. Set	69.99	50.50
Deluxe Paint II	69.99	50.50
Deluxe Photolab	69.99	50.50
Deluxe Print	24.99	18.50
Deluxe Print II	49.99	39.50
Deluxe Productions	139.99	122.00
Deluxe Video	69.99	50.50
DevPak Assembler	59.99	45.50
Digicalc	39.99	29.50
DigiPaint	39.99	29.50
Digiview Gold	149.99	125.00
Digidroid	59.99	50.50
Digistand	59.99	50.50
Director	59.99	45.50
DOS 2 DOS	39.99	29.50
Excellence	228.99	182.50
Express Paint	69.99	50.50
Facc II	29.99	21.50
Fantavision (Tel for availabilty)	39.99	29.50
Forms in Flight	69.99	50.50
Godspell 2	29.99	21.50
Gomf 3.0	29.99	21.50
Grabbitt	29.99	21.50
Hot and Cool Jazz	9.99	7.00
Home Accounts	29.99	21.50
I.F.F. Library	79.99	60.50
Impact	63.99	44.50
Instant Music	29.99	21.50
Interchange	49.99	39.50
Introcad	59.99	42.50
K Spread 2	79.99	60.50
K Seka Assembler	49.99	32.50
Kara Fonts	59.99	45.50
Kind Words 2	49.99	35.50
Lattice C Version 5.0	249.00	185.00
Lights Camera Action	57.99	39.50
M.C.C. Pascal Version 2	89.99	69.50
Macro Assembler	69.99	50.50
Mailshot	49.99	39.50
Maxiplan A500	99.99	79.50
Maxiplan Plus	149.99	109.50
Microfiche Filer	79.99	62.50
Modula II	139.99	109.50
Movie Setter	69.99	50.50
Music Studio	34.99	24.50
On Line	110.46	107.00
Organise II	69.99	50.50
Photon Paint	69.99	50.50
Pixmate	49.99	39.50
Power Windows 2.5	69.99	50.50
Prism	59.99	45.50
Pro Board	139.99	109.50
Pro Net	139.99	109.50
Pro Video CGI	159.99	134.50
Pro Video CGI Fonts	69.99	50.50
Pro Video Plus	249.99	185.00
Pro Video Plus Fonts	99.99	72.50
Professional Page	249.99	185.00
Project D	39.99	29.50
Publisher Plus	99.99	79.50
Quarterback	49.99	39.50
Rock and Roll	9.99	7.50
Ruby View Term	99.99	79.50
Sculpt 3D	85.00	69.50
Sculpt 3D Animate	129.99	111.50
Seasons and Holidays	9.99	7.50
Shell	49.99	34.50
Simp Library	79.99	60.50
Sonix	57.99	39.50
Studio Magic	69.99	50.50
Superbase	89.99	72.50
Superbase Professional	249.99	185.00
Superback	52.50	39.50
TV Show	69.99	50.50
TV Text	69.99	50.50
Tool Kit	39.99	29.50
Turbo Silver	139.99	115.00
Video Titler	110.00	85.50
Videoscape 3D	143.75	117.00
Wordperfect 4.1	228.99	185.00
XCad	460.00	325.00
Zuma Fonts (1-3) (Each)	34.99	24.50
Ultimate Soundtracker	39.99	32.50
E-Type	39.99	29.50
Day By Day	29.99	21.50
Protext	99.99	79.50

Educational Software

Con. Sound Tratton (Age 4+)	31.95	24.50
Matchit (Age 2+)	31.95	24.50
Mathamation (Age 13+)	69.99	50.50
Mathamagician (Age 6+)	39.99	29.50
Robot Readers (Childrens Stories) (Each)	24.99	18.50

Hardware List

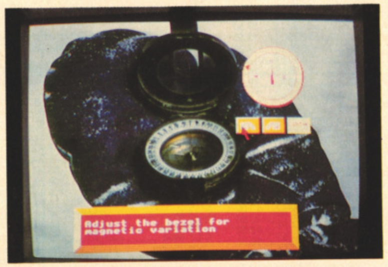
A500 Amiga (inc Built in Disk Drive and 1.3 Kickstart, Mouse, Power Supply, Workbench "The Very First" and Modulator)	399.00	360.00
A500 Amiga with 1084/S Colour Monitor	649.99	620.00
1084/S Colour Monitor	299.99	260.00
A500 Amiga, 1084/S Colour Monitor and 2nd Disk Drive	749.99	665.00
1084/S Colour Monitor and Philips TV Tuner	399.99	360.00
Philips TV Tuner	99.99	95.50
Cumana CAX 354 Standard Disk Drive	99.99	95.50
Cumana CAX 354 with Power Supply	150.00	135.00
Genlock 8802	299.00	270.00
Triangle Broadcast Quality Genlock	915.00	850.00
A501 1/2 Meg RAM Upgrade for A500	175.00	150.00
B2000 Amiga	1269.00	999.00
B2000 Amiga and 1084/S Colour Monitor	1494.00	1350.00
A2058 (8Mb RAM Board Populated with 2Mb)	746.35	695.00
A2088 XT Bridge Board	607.20	573.00
A5060/A2092 20Mb MSDOS Hard Disk	402.50	395.00
A2090/A2092 20Mb Amiga DOS Hard Disk	460.00	445.00
A2010 Internal 3 1/2 Disk Drive	196.65	172.00
Cumana CSA100S External 5 1/4 Disk Drive	120.00	115.00
Star LC10 Black and White Printer	297.85	255.00
NPS 1230 Black and White Printer	249.99	235.00
Star LC10	343.85	315.00
Star LC24/10	458.85	425.00
Star NR15	688.85	660.00
Star NB24/10	759.85	735.00
Star NB15	1056.85	985.00
Star Lazer 8	2287.00	2195.00
14" Cotron Hi Res Colour Monitor	747.50	695.00
20" Cotron Hi Res Colour Monitor	2070.00	1879.00
Cherry Pad A3 Digitising Tablet	632.50	595.00
Video Driver Card (Must be sold with Cotron)	396.75	360.00

To the Top of the World... with CDI

Unless you happen to be at one of 2,000 schools that possess the Laserdisc hardware bought to run the BBC Domesday system, you'll be unlikely to catch a glimpse of Virgin's* North Polar Expedition. *But hang on in there. This exciting project is paving the way for entertainment in the nineties – Compact Disc Interactive. Andy Storer visits the future and comes away feeling on top of the world.

The North Polar Expedition project has been designed from the outset with Compact Disc Interactive in mind. The aim was to write a leading-edge retrieval system that could be used as a live and profitable testbed for CDI applications.

Virgin Publishing saw the potential for testing the system and product in the educational market and set about commissioning the necessary groundwork to realise a project first conceived five years ago.



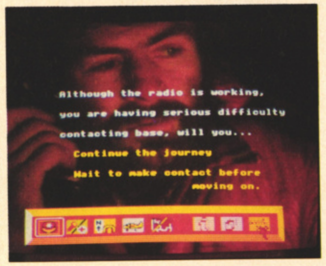
```
Adjust the bezel for
magnetic variation
```

• Setting your compass bearing is represented by a moving sequence of stop-frame stills

A surrogate journey

Back in February 1982, Sir Ranulph Fiennes and two companions set off on a 450-mile trek across the frozen wastes of Northern Canada in a bid to reach the North Pole. Six months later they were picked up by the expedition's support ship near Spitzbergen, having successfully completed the mission after floating south on ice for 90 days.

In *North Polar Expedition*, up to five students can elect to take on the role of the original team members and retrace their historic footsteps. There's a leader, of course, ably supported by a mechanic/medic, Navigator/Radio Operator, Supply pilot and Land/Sea Base Controller.



```
Although the radio is working,
you are having serious difficulty
contacting base, will you...
  Continue the journey
  Wait to make contact before
                   moving on.
```

• Hi-res photographic images are used to show various vital decisions

Initially, each member has to answer a range of on-screen questions designed to establish the team's ability to meet the task at hand. By clicking on a hand-held tracker ball, answers are chosen from several displayed options overlaid on short film sequences and static slides. An information icon can be clicked to reveal pertinent background data on the question. Correct answers bump up individual scores and contribute to the overall team morale and resource level.

From ice caps to school caps

A Los Angeles-based company, Armand Hammer Productions, shot a 105-minute, award-winning documentary of the expedition on 35mm film. This footage and the accompanying sound-effects form the basis of Virgin's first multi-role, educational adventure conceived by their Interactive Video Manager, William Beckett. Along with Fiennes' own visual material – some 500 slides and 20 minutes of 16mm film – all 54,000 frames of *North Polar Expedition* reside on a single 12" videodisc running on a Philips LV ROM player. Hooked up to a BBC Master with dual floppy drives to handle the database editor, on-screen overlays and information retrieval system, any single frame can be accessed in less than half a second.

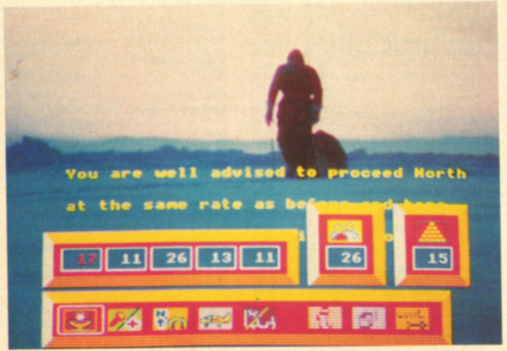
Programmed over 10 months by Virgin's Tony Green using the BCPL language, this interactive game or simulator – no one knows quite how to refer to it – is designed for use in schools as a group interaction learning process.

Once your initial chances of success have been determined, you set your compass heading, choose a landmark and you're off. The trek is structured around the 60-100 days it takes to reach the Pole, and at the end of each day you're told the wind direction and visibility, your team's position, distance travelled, speed to date, speed required, days since last airdrop and food remaining. You also have to regularly radio this data to the Land/Sea Base Controller and Supply Pilot after aligning and tuning your transceiver.

Each day is spent negotiating a variety of problems and weather conditions thrown up randomly by the program. Again, these are overcome by sucessfully answering multi-choice questions randomly addressed to individual team members. In this way, no two journeys will be the same.

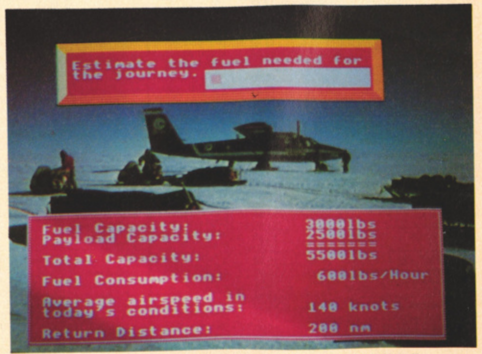
Since it's estimated a successful traverse of the ice cap might take an expert 1-2 hours, a 'game-save' facility has been built into the software. Interestingly, there's no chance of you dying. A death would make the rest of the expedition impossible, since every role is vital to the safety of all. Instead, if a team member becomes too injured to continue they are simply airlifted out and replaced.

Every stage of the expedition is supported by a diverse range of moving footage, stills, maps, diagrams and audio spot-effects, interrupted by windowed information and update screens. All input is by icon control except for questions demanding numeric information – i.e. the bearing you propose to take or your estimate of the distance you've travelled. So don't get the impression all you'll see are the icy wastes of some vast white desert – there's a whole host of activities and decisions to keep you on your toes. Which is just as well really as otherwise they'd probably drop off. ●



```
You are well advised to proceed North
at the same rate as be
```

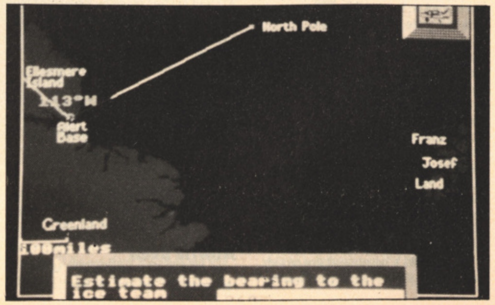
• Trudging through the tundra. The icons bottom screen refer to the team members while the numbered ones represent individual scores. The large icons show the whole team's morale and resource levels



```
Estimate the fuel needed for
the journey.

Fuel Capacity:                3000lbs
Payload Capacity:             2500lbs
                              =======
Total Capacity:               5500lbs
Fuel Consumption:              600lbs/Hour
Average airspeed in
today's conditions:           140 knots
Return Distance:              200 nm
```

• Before your supplies can be airlifted the pilot has to take some decisions himself



```
Estimate the bearing to the
ice team
```

• Just remember, when you reach the North Pole the only direction is South!

Techno-shock

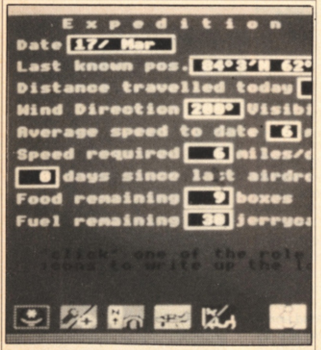
CDI represents the convergence of a range of media and signals the death-knell for magnetic tape-based entertainment and storage. Only videotape is likely to survive in the long term.

The system will provide digital sound with, at long last, digital video, and is envisaged as a group usage medium similar to TV. Virgin have plans to release a interactive encyclopædia and several expert system packages such as DIY and car maintenance incorporating detailed still and moviing sequences.

A CDI game based on the music industry where you get to manage a pop group is also on the cards. This will feature CD quality hi-fi sound and video along with biographical material. (Where are you *Sigue Sigue Sputnik?*).

CDI future ?

CDI players are will probably be launched in the UK in mid 1990 and will cost around £1,000. By 1992 they are expected to cost between £300 and £400 and to have attracted worldwide sales of100,000. They will be able to play existing audio CDs as well as CD ROM applications.



```
E x p e d i t i o n
Date 17/ Mar
Last known pos. 84°3'N 62°
Distance travelled today
Wind Direction 200° Visibi
Average speed to date  6
Speed required   6 miles/
  0 days since la:t airdro
Food remaining   9 boxes
Fuel remaining  30 jerryca

  'click' one of the role
  icons to write up the l
```

• Your end of day log showing performance

• A 12"Laser disc alongside another of Philips' exciting innovations – a 5" CDV disc. These are capable of combining six minutes of audio-visual play with an optional 20 minutes extra sound. And yes, you guessed it – they'll mainly be used for music promo material.

Laservisuals

A 12" laservision disc running on Philips LV ROM Format can store up to 650 Mbytes of moving pictures, still frames, text and audio. A laser beam is used to retrieve data from a surface of refelctive and non-reflective pits. Film and stills material is telecined onto 1" videotape before being lasercut onto masters. However,the system is read-only – program data has to be updated with accompanying software and can only appear as text overlays.

The Japanese are the biggest fans of Laserdisc systems, having bought 1.5 million of them. Half a million units have been sold in the States and the rest of the world has bought a quarter million.

The Philips and Pioneer systems form the main basis of the interactive video market, which is estimated to be growing at a rate of 50 per cent each year. In the UK the BBC are the premier producers of product – to date they've released interactive programs on volcanoes, ecology and the British countryside, and are currently working on *London* – a training and information project based on the capital.

Virgin publishing are also planning to produce further laser-based products. In the pipeline is a business travel package and an intriguing arcade action product (see news story on page 5).

Philips' firsts

The *North Polar Expedition* package costs £199 and includes a 12" videodisc, 2 BBC-compatible 400k disks, Sir Ranulph Fiennes' book of the expedition *To the Ends of the Earth*, a teacher's guide, and manuals with maps for each team member. If you want to buy the system off the shelf – which means contacting Watford Electronics – it'll cost you around £4,000.

The first widely available laserdisc application was the Domesday Project produced by BBC, Acorn and Philips in 1986. It's an encyclopædia of Britain in the eighties and comes on two video discs comprising 150,000 pages of text, 55,000 stills, 10,000 sets of statistics and an hour of video sequences. Based around Ordnance Survey maps featuring 270,000 place names, it's possible to zoom progressively from satellite scale right down to street level and pick up details on housing, land use, society, economics and environment.

• The Domesday system uses the same tracker ball control as North Polar Expedition

EXPRESS MAIL

Dear Reader

Two more pages packed with a small selection from our postbag and Rob Ainsley's replies. Got something to say? Make your voice heard in computing's liveliest letters page! Send to: **Express Mail, 4 Queen Street, Bath, Avon BA1 1EJ**

PS. Sorry, NO personal replies, whether you include an SAE or not. We're too busy putting Express together!

A CRACKER WRITES... JUST

OK thats it. I've had enough of this B—it crap. I'm now going to tell you niave little people who think England is the land of fair play with strawberrys and cream!. Soft Ware piracy rules along with Hackers, Crackers and all other covert operations in the computer industry.

My short message is this, FAST are wasting their time because I and about 2000 thousand other user in and around the South West of England are getting our hands on software for about £2.00 each. You name we've cracked it ,played it and copied it. If you think I jokeing, well figure this. I and my friends have recieved copies of SUPERMAN and that not even released yet.

• Crackers: Are they illiterate yobbos?

Don't worry if your baffled Express Mail, because every month I will send you a sample disk of just some of the games were messying with.

Every package published each week, I would have already Cracked, played, copied. HAH by by suckers.
George

● ***But its still stealing isnt it? I mean you would'nt be so proud of yourself if you had mugged an old woman would you or maybe you would I dont know, its a shame that the atittude of you're letter gives Crackers the immage of being iliterate yobbo's HAH well thats just not true is it?! becasue THERE NOT, many of my best freinds are crackers and most of them can read and rite just as well as you or me can.***

I'D HAVE X FOR BREAKFAST

I read with great interest your recent article with the interview of Mr. X, who was your mysterious cracker. I am also a program cracker, but not living the same type of low life that your Mr. X is.

I started cracking programs about 5 years ago when I was given my first computer, a BBC model B, which was a delight to use. The amount of software available was excellent. Then about 18 months ago I decided that the programs from the 8-bit sector were just not challenging enough, and it was time to go 16-bit. After spending 3 months reviewing PCs (OK, but not enough games software), Amigas (technically excellent, but very overpriced), I plumped for an Atari ST, and the advert was very true: 'Power without the price'.

I criticise Mr. X because all the programs he deals with are copies, and he only has copies in his collection, whereas I had over 200 cracked programs for my Beeb, and have well over 30 for my ST, *but I also have the originals*, and do not pass on copies of cracked programs. I crack commercial software for a variety of reasons:

1 To enhance the game by adding extra lives, infinite energy etc, to enable me to see into the depths of the game;

2 To strip away the copy protection and thus make the game load faster, and cleaner;

3 To improve my programming knowledge by studying the code used to write the programs, and the copy protection;

4 In many cases the only way to make a legitimate backup is to strip the copy protection away.

I find nothing wrong with what I do, as I buy the original of any program I intend to crack, and do not pass on these cracked programs to anyone else. They are for my own use only.
Xeer

ARCH FIENDS

I started an Archimedes user group about six months ago with a few friends here in Dublin. Since then Arc users users from all parts of the British Isles have joined us and we now have about 500 members throughout the UK and Ireland. Through our monthly newsletter 'Archer' we spread news, software and ideas. Our main emphasis is on programming rather than hardware projects. Recently we have also payed attention to users in education, since the Arc is replacing the old beebs.

One of our aims is to promote the use of this computer, which seems a seriously underrated machine, especially now that both Unix and the new RISC OS are available for it.

The group may be contacted at: **OF Smyth, ARMUG, 41 Beech Park Road, Dublin 18**. Our sub is £20, which includes twelve newsletters and regular software offers.
Ossian Smyth, Dublin, Rep of Ireland

JOIN THE AA

The machine-specific column, 'Your Format' is an excellent idea since it saves me ploughing through pages of irrelevant material to find the relevant. In that slot I find a reference to a magazine entitled 'A*strad Act*on' made by its editor Steve Carey. Is there such a magazine and does it cater for my CPC464? I haven't seen it in the shops in Lisburn.
A Cooper, Lisburn, Co. Antrim, N.I.

● ***Yes, Amstrad Action is a real magazine. It is usually called AA, though this is not to imply that its writers are either drunk or broken down. It caters for all CPC owners and if you can't find a copy in your local newsagents, you can order one from The Old Barn, Somerset, Somerset TA11 7PY, price £1.50.***

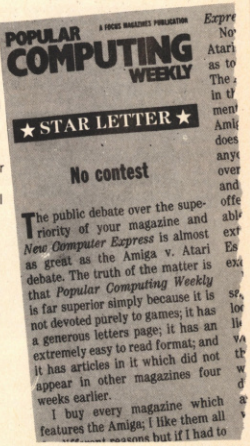
AUNTIE BEEB

I was infuriated to see the BBC Micro referred to as 'the dull old Beeb' in your magazine. The Beeb is the most successful 8-bit computer and there is no justification for this remark. I think maybe the writer of the article should try using a BBC and realize for himself its potential.
Peter Cumberland, Epsom, Surrey

● ***Well, it's certainly old, it's definitely called 'Beeb' and the use of the definite article in the phrase is incontrovertible, so we're left with the word 'dull'. Unkind maybe, but I've met few people who would describe the Beeb nowadays as exciting, stunning, breathtaking etc. Like a Morris Minor, it does a good workhorse job very reliably and successfully but can't really be described as glamorous any more.***

BOUND TO LOOK STUPID

The public debate over the superiority of your magazine and *Popular Computing Weekly* is almost as great as the Amiga v Atari debate. The truth of the matter is that *Express* is far superior simply because it has columns devoted to different micros; it has a generous letters page; it has an extremely easy to read format; and it has articles in it which did not appear in other mags four weeks earlier. I buy every magazine which features the Amiga; I like them all for different reasons, but if I had to choose between *Popular Computing Weekly* and *New Computer Express*, you would get my money...
L Bound, Bolton, Lancs



POPULAR COMPUTING WEEKLY

A FOCUS MAGAZINES PUBLICATION

★ STAR LETTER ★

No contest

The public debate over the superiority of your magazine and *New Computer Express* is almost as great as the Amiga v. Atari debate. The truth of the matter is that *Popular Computing Weekly* is far superior simply because it is not devoted purely to games; it has a generous letters page; it has an extremely easy to read format; and it has articles in it which did not appear in other magazines four weeks earlier.

I buy every magazine which features the Amiga; I like them all

● ***Thank you for your kind words, Mr Bound. Funny how they are almost exactly the same words as in your prize-winning letter to Popular Computing Weekly last week, but in a different order. Now rearrange these words to make sense: you'll prizes sunbeam no us get from sodding.***

PIRACY IS REALLY COOL

I have never before written to a computer magazine, but wish to make my comments heard regarding software 'piracy'. The asking price of games software for the 16-bit machines of £20 plus is scandalous. The software companies (and magazines) continually defend this sham by stating that 16-bit takes 'longer to program' and that the software is of 'superior quality'. This argument is patently rubbish. It can be said that due to the vast memories of the 16 bitters, less time has to be spent trying to cram a program into a limited space. As for quality, the 16-bit machines have the speed, processing and graphics capabilities of a higher quality than the 8-bit machines. The software companies are trying to claim credit for producing a better product when it is the machine itself that provides the superiority. You could hardly expect to market a game of Spectrum quality on an ST or Amiga!

I am therefore happy to agree with the distribution of 'pirated' software as the software companies are pricing themselves out of the legitimate market. I do not buy any games software with a hyped-up price on principle. There is in my opinion no game worth £20 plus. It is clear that such prices are set in order to force the younger members of our society in the main, to part with their cash. This is the most sinister aspect of the pricing policy.

I know you will say that when more ST and Amiga computers are in use, competition will force down prices. This is true, but when you think about it, software houses will be selling a cheaper product in smaller numbers to a wider public and still be making a healthy profit (look at the budget software houses). At the moment they are sitting back, happy in the knowledge that they are selling to a limited market of customers eager for their releases, therefore guaranteeing an uptake of their product due to lack of competition. This gives them an ideal opportunity to charge a high price.

My advice to the public would be not to buy new releases until the price drops due to lack of sales, and to wait and buy second-hand when yet another disillusioned buyer finds that he has paid the price of all that hype. That is one sure way of getting the software houses to stop charging these ludicrous prices.
Ray Best, Nottingham, Notts

● ***A bit confused, sorry: first your quotation marks imply that the 'superior quality' of, say, an Amiga game is an illusion, but then say you can't expect a Spectrum game to be marketed on an Amiga. No, the difference isn't just hardware: there's a trade-off in the programming between ease of writing for such a powerful processor and big memory and extra design effort needed to develop those quality graphics.***

No game worth £20? Come on, you've just spent £400 or so on a machine to play them on. Non-buying of games you think are too expensive is one thing and may or may not bring prices down; nicking them in the shape of pirate copies is another and will certainly push prices up.

PG FOR DENNIS THE MENACE?

WINNER

Oh boy, I just can't believe it, 'Computer violence'. Are you kidding me? I've heard it all now. Bored with trying to ban violence on the TV, these people are now turning their attention to computer games. Are they real? It's totally absurd. After playing Barbarian or Veteran on my ST, I have no inclination to maim or bludgeon anyone to death with a large blunt instrument! My younger brother often has his friends around to play on the computer, and not one of them has inflicted any damage to anyone else, although they may pull the dog's tail from time to time!

Dr Radecki said that some kids are spending over fourteen hours a week playing video games, and that they are a complete waste of time. However, doesn't this time spent playing computer games keep kids off the streets where they could inflict "real" damage, and get into "real" trouble?

Computer gaming is a hobby OK, so come on guys, lay off, leave the kids alone. I can only assume that you're jealous. You didn't have computer games when you were young, but they do, so let them have their fun. Really, you're just too narrow-minded. Next you'll be trying to ban the "Beano" or "Dandy". Try putting an 18 sticker on them!
M Thomas, Crumlin, Gwent.

● ***If you start banning things which contain violence regardless of how artistic or comic it is intended to be, then you'd have to ban:***

a) Tom and Jerry
b) Dennis the Menace
c) Shakespeare (King Lear, Cymbeline, Macbeth etc.)
d) The Bible

...and just about every modern work of literature from Ulysses to The Satanic Verses.

● ***Hmm; I'm not sure about quality and shoot-em-ups being disjoint. There are some very good shoot-'em-ups and some very bad 'intelligent' games. It's our duty to the large proportion of our readers who are interested in arcade style games to give them fair coverage. Sure, a lot of games are hackneyed, forgettable, unimaginative and pointlessly violent – but if they are we do our best to point this out, and hopefully guide the readers and therefore the market in some small way to improved quality. I agree totally that gaming software must move away from its current obsession with shooting things if it's to become legitimate leisure, but it's still early days. Change will be slow and must come from within – ie. from you, the buying public. As this first generation of computer users gets older maybe we'll see things changing and a wider base of game styles developing? I hope so.***

MORONS

You invited comments from the public, so here goes! I deplore the current vogue for software which emulates a low category of arcade release. There seems to be a craze for the vertically or horizontally scrolling "shoot em-ups" without any mental input. Basic moron fodder, which you help to promote.

I know the argument – if it sells it must have good points – but really that could apply equally well to something as undesirable as narcotics. Whatever happened to quality? We are a varied public with varied tastes and the software industry should reflect that, instead of pandering to an easily exploited teenage market with a violent bias.
Alan Boxwell, Bristol, Avon

PROGRAM YOUR PCW

At the moment I own an Amstrad 6128 and I am hoping that someone could advise me whether to purchase an Amstrad PCW 8256 for some simple programming.
D Makin, Essex

● ***The poor underrated PCW is in many ways an ideal machine for programming because it's relatively straightforward, robust and inexpensive. Mallard BASIC comes with the machine free and is a good version of the language with JETSAM, special filing commands for writing databases. Otherwise you have a wide range of programming software you can buy: Pascal, C, Forth, BCPL, Modula, some good assemblers, graphics routines – HiSoft (0525 718181) do most of these among others.***

PROTECTION RACKET

All this talk about computer pirates – what about a word or two about us users? Some software houses seem to have forgotten we exist. Their sole concern seems to be to develop such sophisticated protection devices that *no-one* can get at their programs.

I for one am fed up with programs that are hard to load, or fail to load at all, or are deliberately inconsistent with peripherals; or are made tedious to use on account of idiotic codeword routines. All in the name of "protection". In fact, the more sophisticated the protection devices become, the more the challenge incites the "cracking crews". The only practical effect is to make life difficult for the ordinary user (the vast majority) who shells out his hard-earned cash in the High Street store.

I'm glad to see that a change is beginning to occur. For instance, Ashton Tate, makers of dBase III, have taken out the protection routines from their products, on the grounds that (a) piracy is now recognised as a crime; (b) most people are not criminals; and (c) a product that is user-friendly and can be easily backed up better than one which is hostile. The sooner more companies follow their example the better.
Roger Musson, Edinburgh, Scotland

● ***It would certainly be nice to see games houses following Ashton Tate's example, though I suspect it will be a long time. More people are likely to rip off a game they would otherwise have bought than they would a business database such as dBase III; you need a manual to use it, and besides it has lousy animation and rotten graphics.***

AND IT DOESN'T DAMAGE LAMP-POSTS

In an article in Issue 9 you make some very unjust and incorrect statements about Workbench and CLI on the Commodore Amiga computer. This article was called INFURIATING and in some ways it certainly was!

Throughout the article you state that the DOS is a "dog" and that the Amiga's operating system is "not a patch" on the ST or Mac's systems. Whilst I agree with your comments about the speed of disk access, I do not think the reviewer has ever used the Amiga to the full as there is no way that the ST's GEM environment is either as adaptible, complex, or comprehensive in its capabilities as AmigaDOS. GEM is faster to use, but that, as far as I've been able to see, is where its superior capabilities end.

Having had the opportunity to look very closely at both machines before deciding to buy an Amiga A500 18 months ago, my mind was finally made up by the Amiga's much more flexible if slower Workbench and CLI (now superseded by Shell on Workbench 1.3). Also I know quite a few ex-Atari ST now Amiga owners, who say more or less the same thing. However, that's not to say that improvements to AmigaDOS would not be welcome as it certainly is not perfect by any means, But it's not as bad as your article portrays it, and it is certainly not as limiting as GEM on the ST.

Apart from that small criticism, I find your magazine a positive bargain... Keep up the good unbiased coverage!!!!!
J Simon, Oakham, Leics.

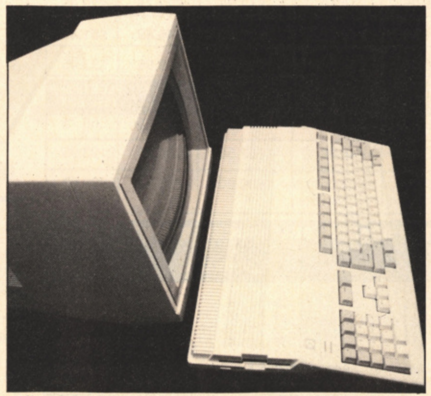
● ***Well, it wasn't that much of an insult. Quite appropriate really: a dog is a man's best friend (Amiga, geddit?) and also takes a few seconds to retrieve things.***

MSXTREMELY PATIENT

A couple of years ago I purchased the MSX game 'Elidon', released by the software house 'Orpheus'. My employment gives me the opportunity to use photographic facilities which I have used in the mapping of this game.

Over 4,000 screens and about a years work later, I started to play the game. To play 'Elidon' you guide a fairy through a maze of woodland scenes. You then pick up seven potions in a certain order to take to seven flowers. After all the hours I have spent on this enchanting game I discover that there is *no* seventh potion. An arrow which generally indicates its location (lower right of the maze) points outside the extreme perimeter of the game!

Can anyone help me? Orpheus seem unobtainable! Maybe just by a chance in a million the programmers (Paul B Kaufman, John B Marshall, Geoff Phillips and Jon Maskill) of this game read 'Computer Express'.
S P Kowalski, Hucknall, Notts.



• Cheap Amigas for students – or just easy terms available...? See Loan Arranger

LOAN ARRANGER

I am writing with reference to the special preview issue of NCE free with the December issue of ACE. On page 2 you mention that students may be able to purchase the Amiga at sub-retail prices. Could you give me more information on this?
Marc Carper, Dundee, Scotland

● ***No cut-price Amigas I'm afraid, but a loan scheme will enable you to borrow the dosh for your machine – plus special bundled software – and pay off just the interest. When you get a job you clear the balance. See the news item on page 2.***

The way student grants are going, this is a scheme you'd better get used to...

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Your computer's speed and graphics power – or lack of them – are really of little interest to anyone else. They'll judge you by the quality of your letters, the look of your novel manuscript, the readability of your listings, the clarity of your newsletters...and that means the quality of your printer.

There are hundreds of different models: 9-pin, 24-pin, inkjets, lasers – but which is for you? And which are the best value? Express Essentials tells you what you need to know – and names the best buys

Choosing a printer is probably more difficult than choosing a computer: there are variations in the way ink is put on paper, the speed of the process, other considerations like paper feed, and the subjective questions of print quality.

Unless you use your micro exclusively for writing letters you can forget daisywheels, and lasers remain too expensive for home use. So, for the vast majority of applications, you can restrict yourself to two main kinds of printer: impact dot-matrix machines with 9 and 24 pins; and ink-jet models.

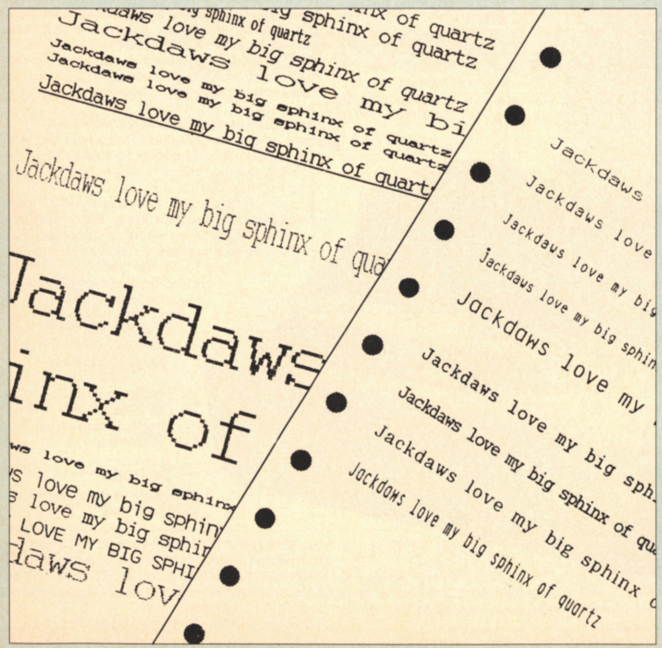
A TASTE OF MONEY

There are something like 300 different makes and models of printer available. And since there are only a handful of different technologies, and a few "extras" like speed and easier paper handling, price is the most competitive way for one manufacturer to score against its rivals.

It's also the easiest way to narrow down your field of choice: set your budget and then consider the possibilities in that price range.

Price forms one corner of a price-performance triangle, with the other two corners occupied by print speed and print quality. As a general rule you can count on having a cheap, fast printer with less than brilliant output, or a cheap, high-quality printer that works at a crawl. But you have to pay heavily for speed and quality together.

The prices given here are not recommended retail prices. Printers are more heavily discounted than any other computing item, so we've given typical advertised prices from a variety of retailers. If you can find the same printer for less than our price you can be sure you're getting a good bargain. By the same token, if you're being asked to pay considerably more, shop around for a while before parting with your money.



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MY PRINTS WILL COME

Manufacturers are very kind to themselves when quoting print speeds, usually given as characters per second (cps). Normally, you'll see two figures: one for draft and one for near-letter quality (NLQ) type.

These figures are always optimistic because they're based on artificially easy printing tasks. When the printer has to deal with real-world jobs that include lots of paragraphs and carriage returns, the genuine speed has to be at least a little lower than the manufacturer's ideal.

It's also difficult to translate cps speeds into something more understandable. As a rule of thumb, there are six characters in the average word, about ten words to the average printed line, and about 50 lines to the average printed page.

So a speed of 30 cps (about average for NLQ printers) translates to about six words per second, and about 350 words per minute. The average novel would take nearly five hours to print out (a typical laser printer could knock it out in half an hour).

HANDSOME PRINTS

For many users the quality of the output is perhaps the single most important factor after price. But although there is a temptation to go for the best-looking results, you should take other factors into consideration.

If most of your printouts are file copies for your own use, speed might be more important than producing good looking type that no-one else is going to see.

There is a direct trade off between print quality and speed. Although 9-pin printers have something of a reputation for poor print, it's reputation that isn't really justified. The better 9-pin machines can produce output very close to that of low cost 24-pin and ink-jet models.

But they manage this by printing each line twice, one on top of the other, slowing down the print process considerably. 24-pin printers are a lot quicker – often three or four times as fast – because they can put the same number of dots on the paper in fewer 'passes'.

THE PRINTS AND THE PAPER

This is something that often gets overlooked when shopping for a printer, although if all you need is a model that can churn out reams of text or program listings on tractor paper then you can probably get away with giving it little consideration.

However, for users with greater needs – perhaps requiring mixed usage of tractor paper for data dumping, and single-sheet headed stationery for correspondence – paper-handling can bear a lot of examination.

Early printers only took tractor paper (also called fanfold, the concertina-like paper with extra strips of holes down the sides). Modern models support both tractor and friction feed (the latter for single sheets) but how they do it varies enormously.

☞

The best allow you to "park" the tractor paper quickly and easily while you switch to single-sheet. And if you expect to use a lot of single-sheet paper a sheet feeder can make life a lot more pleasant.

BEST BUYS

Budget

Citizen 120D ▪ 9-pin dot-matrix ▪ £130

The Citizen 120D has been around for quite a while now – indeed, it's just about at the end of its commercial life. But that's why it's generally available at ridiculously low prices – we found it advertised for as little as £100.

The Citizen won't set records in any department, but for the money you get a good little workhorse. "Little" is a fair description too, since this machine is about half the size of some printers, which could be important if you're short on desk space.

It covers all the essentials in reasonable fashion: quoted print speeds are 120 cps in draft mode and 25 cps in NLQ. The draft is highly readable (something that occasionally gets overlooked in the rush to NLQ), while the better font is adequate for correspondence. It also does a surprisingly good graphics dump.

Paper handling is far from sophisticated, but again the 120D does the job. It handles single-sheets well, automatically grabbing the paper and feeding it to the top of the page. Tractor feed is handled by a clip-on unit which can be left in place if you want to use occasional single sheets but the fanfold paper must be removed.

One extra attraction for C64 and 128 owners is that a special interface is available that allows the 120D to be used directly from the Commodore serial port.

CITIZEN 120D

- Above: Pushed for money? The Citizen 120D is the best buy
- Below: Everyone's favourite 9-pin – the Star LC10
- Right: 24-pin quality needn't be expensive with the NEC P2200

9-pin dot-matrix

Star LC-10 ▪ £195

This is everybody's favourite printer at the moment. Although it's not the fastest printer around (120 cps draft, 30 cps NLQ) the LC-10 has a number of features that set it well ahead of the competition.

To begin with, standard print quality is excellent, with the NLQ as good as that of some 24-pin printers. But – unusually for a printer in this class, and especially at this price – the LC-10 also supports extra fonts, providing three alternatives in Courier, Orator and Sans Serif. Graphics output is also good.

The LC-10 scores heavily too on paper-handling. Single sheets can be automatically positioned from a sheet feeder, while fanfold paper can be parked at the push of a button, allowing single sheets to be used without removing the fanfold.

To cap it all, for an extra £30 you can add a colour facility which, while not brilliant, is financially a lot more attractive than a £1,000-plus Xerox ink-jet.

In total, there's nothing to criticise in the LC-10 and a great deal to commend it. Outstanding value for money.

24-pin dot-matrix

NEC P2200 ▪ £315

If you need a heavy-duty printer, built to last and capable of excellent print quality, this is the machine. With both Epson and IBM compatibility, the P2200 boasts respectable print speeds of 140 cps in draft and 47 cps in NLQ.

The standard font is big and chunky, producing eminently readable text although lacking a little style for business correspondence. However, there are four additional fonts built in and these cater for just about every eventuality, with a standard Courier-style typewriter font, a very attractive correspondence typeface, and two alternative sans serif faces.

What sets the P2200 apart from the crowd is its innovative approach to paper-handling. Paper can be fed from the front or the rear, whichever is most convenient for your particular desktop, and fanfold paper can be parked for using single sheets instead.

All features are controlled from a clearly-designed panel at the front of the printer, and the P2200 wins extra points for its unique menu system: current settings are printed out and then altered using yes/no buttons on the front panel.

NEC has established itself as the leader in the 24-pin printer market (the company produces no other kind) and the P2200 shows its pedigree.

Honourable mention: Epson LQ-500 ▪ £315

Epson is the world leader in computer printers with a reputation for quality and reliability. The LQ-500, the cheapest of its 24-pin printers, lives up to the reputation.

Print quality is excellent in both text and graphics, and it's a shade faster than the P2200, but in an effort to keep the cost down Epson has trimmed a few corners. As a result, the LQ-500 loses out to the NEC on the range of features provided. For example, it lacks the easy-to-use control panel, and the LQ-500 falls well short in paper-handling facilities.

But the Epson name counts for a lot and the LQ-500 is well worth considering for business use.

Deluxe

Hewlett-Packard Deskjet ▪ Ink-jet ▪ £690

For all of us who would like a laser printer but can't afford it, Hewlett-Packard has provided the answer. Although some quibblers have described the Deskjet's print quality as "almost as good as a laser", few mere mortals would be able to spot the difference.

The real difference is in speed: the Deskjet can output perhaps two pages per minute against the 6 or 8 ppm of a typical laser.

Against that you do get 300 dpi resolution, the ability to mix text and graphics, and if noise levels are a factor for you the HP Deskjet is among the quietest printers you can buy.

MÉNAGE A TROIS

If you're lucky enough to have more than one computer but a single printer, you might be aware of the dangers in constantly plugging and unplugging connectors when switching between machines.

A better solution, and more convenient, is a switcher box. Essentially just a box with two or more input ports and one or more output ports, the switcher allows you to leave both computers hooked up to the printer and lets you simply select between them at the flick of a switch.

More expensive models sense incoming data and do the switching automatically.

Other variations on the theme allow you to use your computer's serial port to drive a parallel printer, and vice versa. And reversing the process would let you have one computer attached to two printers – perhaps a cheap dot-matrix for graphics work and a daisywheel for business correspondence.

Prices start at around £20 for a simple two-to-one parallel box. You can also combine switcher boxes and print buffers, getting the advantages of both in a single unit.

THE PRICE OF FRAME

For all the impressions of miniaturisation in computers, everybody knows that once you start adding to your system you end up with the desktop equivalent of urban sprawl. The computer, monitor, disk boxes, mouse mat, and a couple of books or magazines soon occupy the largest desktop – or dining table. Add a printer, and things threaten to plunge to their doom on the carpet.

A printer stand can at least alleviate the problem by raising your printer off the desk and providing somewhere for your paper to live.

The cheapest are simple wire or plastic frames with prices starting around £10 to £15. Others, with prices up to £30, are things of beauty in terms of robust construction and providing input and output trays, allowing you to leave a long document printing without fear of it spilling onto the floor where the cat, dog, or the youngest member of the family will devise all manner of ways of destroying it. ●

A break for adds

The notion of buying add-ons for your printer might seem a little strange, but there are several items you might consider that can speed up your printer, make it easier to use, or otherwise overcome some of its limitations.

The most impressive gains can be made by adding a hardware print buffer to your system. Although it can't speed up your printer, it can increase the overall system speed by freeing your computer for other work more or less instantly instead of keeping the computer, and you, hanging around waiting for a slow printer.

The buffer is basically a large chunk of memory that connects to the computer printer port on one side, and the printer on the other. When you want to print a document, the computer just dumps it to the buffer at high speed and then thinks the print job is complete.

The buffer, meanwhile, feeds data to the printer at the printer's pace.

With prices ranging from under £100 for a 64K buffer to around £150 for a 256K buffer, a dedicated print buffer can be a much cheaper solution than buying a new, faster printer.

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Future shock?

Part IX: Amstrad move on from computers to satellite TV – but where has the old magic gone? William Poel concludes the Alan Sugar story

The expression "the Good Old Days" is being heard rather more frequently in Amstrad admirers' circles. Something has gone astray, but the bravado and general "beastliness" of the company doesn't invite friendly comment and debate to see where the one-time glamour company of British computing is now going. Alan Sugar will regard all this as yet another example of knockers ganging up, and in the past he has always managed to sink criticism of this type by simply outperforming expectations.

The trouble is analysts, being cute, now expect expectations to be outperformed. This means that expectations run even higher. So it is all the more worrying when the magician of Amstrad finds the rabbit is no longer in the hat.

In common with many other computer firms, Amstrad has been going through a tough six months. The favourite old chestnut about RAM shortages has some credibility, but when examined more closely it looks precariously like a handy excuse to cover up some manufacturing and development problems getting the PC2286 and PC2386 to the stores.

No more Sugar-free orbits

Coincidentally or not, at the same time as these problems Mr S. himself has been spending an increasing amount of his time away from computers. The satellite deal with Rupert Murdoch (don't they make a handsome couple?) was duly launched, and the satellite followed suit. To the relief of all involved, it stayed up there, despite being launched perilously adjacent to November 5th and being somewhat inadvisedly called "Astra".

Whatever the internal effects of Sugar moving away from the micros, it has to be said that this opens up some significant future possibilities for the two main backers of the project. For once the immediate opportunity to ship TV receiving gear has been executed, there is then the infinitely more exciting prospect of using the satellite to broadcast data.

• Alan Sugar looks skyward towards the satellite age – but should he be looking over his shoulder?

Murdoch knows that the cost of newspapers and distribution is going to go up and up, but that the cost of the technology to print them in every living room of the land is going to keep falling. Then just think what he can say to the print unions... Will they be picketing every house with an Amstrad Home SataFax?

Quality will be good: the bandwidth of satellite TV is around 25MHz per channel. So if you can get 2,400 bps through a telephone line of 3KHz (just), this goes ten thousand times quicker, plenty fast enough to dump the contents of *The Times* into cache memory for printing at the user's leisure. Maybe the reader will scan the paper on screen and then elect for the hard copy he wants (or, in the case of the the *Sun* reader, be able to blow up sections for better resolution...).

People still want to have something to read on the train, and portable PCs and "electrobooks" are still a step too far removed. The status of having one's *TimesFax* to read on the train will probably also help alert those around to just what a thrusting techno-yuppie you are. Doubtless it will be printed on 6-hole sheets.

And if downloading is going to be that quick, then it's a simple extrapolation of the concept to see that this medium then allows "broadcasting" of all sorts of minority and specialist publications on an overnight basis to readers who have paid for the appropriate decoders.

And while Sugar is at it, why not produce a version of the SataFax which can double up as laser printer and photocopier?

It's all quite possible now, but it seems that the Japs have clubbed together and agreed to unleash these innovations according to an orderly timetable; one that avoids too much unseemly scrabbling which might kill off an opportunity to mug us all with first the photocopier, then the printer, now the fax and scanner, and then – when the money from the separates is safely in the bank – start to perm around these facilities in combi units.

Obviously, one box that was a copier, fax and printer rolled into one would kill the market for separates overnight.

So, if Amstrad wants, there's one hell of a future of opportunities lurking out there. It seems unthinkable that it should be so bereft of ideas that it feels obliged to chop away staff – but that's very much the Amstrad way of doing things. An occasional Napoleonic gesture stiffens the spines of the remaining troops.

Those of us who still admire the singularity of the purpose at Amstrad (money, money, money) occasionally get concerned that a drift into the old ways could spoil the opportunities of the future. And on the evidence of the recent past, there is every reason to be concerned that some of the lessons learned at the outset of its plunge into computing are being forgotten.

But Amstrad is such a mindlessly secret society these days, this presumption may be utterly misguided. But you can be sure of one thing: even on current form, Amstrad certainly won't bother to do anything but deny such rumours, and probably take time out to question and ridicule their very existence. Some things never change...

The wee DRAM people

And now Amstrad strangely invest £40 million in a little-known DRAM producer, Micron, which happens to be sitting on a major copyright lawsuit, with them at the wrong end. What a curious departure from Alan Sugar's usual business practice. In the good old days, he'd have paid MEJ Electronics £50,000 to set up his own DRAM facility, or applied some subtle pressure on one of the major producers.

Maybe Micron has something going for it that we don't yet know about, but shovelling all that money off to the USA at a time when "no money" was being paid to IBM for something far, far more significant to the future of the company (in the shape of the PS/2 and MCA deal) seems strange.

Sugar's bitter aftertaste

It's a terrible shame that there is so little appreciation of PR. Sugar intimidates all those around into a meek submission, so unless things have changed a lot (and they don't generally change at all at Amstrad), then there is no-one really capable of standing up to AMS. Some pretty crude comparisons have been drawn between his management style and the school bully and his sycophants, and these strike too close to home for many observers (including those dreadful City types).

But the truth hurts – even if it is only a perceived truth. Amstrad's recent performance at last entitles the Amstrad observer to level criticism at the management style, since it seems plain that the change of approach needed to take Amstrad through the barrier of successful medium-sized company to successful large company has yet to be made.

So what happened at the time of the change from small to medium? Well, the secret of Amstrad's success was that it never actually made that switch at all, relying on Alan Sugar's dynamic personality to carry the workings of a small company right up to the verge of the very big time.

The beetroot-boiling mentality has served Amstrad, Alan Sugar and some of the longer-term shareholders well, but can it do so indefinitely?●

The Surprise Symphony

The mixture of redundancies and "resignations" from Amstrad just before Christmas has left a question mark hanging over Amstrad's future enthusiasm for several aspects of computers. The fact that software has always been people-intensive has meant that this sits uncomfortably in a firm where turnover per head of staff is measured in millions. Sell a million quid's worth of software, and you need at least ten people to support it properly. Not just hotliners, but testers, developers and fixers.

So the rumour that Amstrad is about to bundle *Symphony* with its PCs would tend to support suspicions that this will then be regarded as the ultimate "something for everyone" freebie, and get Amstrad off the hook, software-wise, in one fell swoop.

I have to confess self-interest here, since I feel that Amstrad's part in the budget software market has muddied the waters and ruined an opportunity for many of the more creative publishers to get a look in to the new markets opened by the Amstrad PCs. Those who fondly believe that money was to be made in the wake of Amstrad's own efforts at software (that name on the box has a hypnotic effect), quickly discovered one of the ultimate truisms of the industry: the only people making money out of Amstrad is Amstrad, thank you very much!

Let's hope that the battle on software moves onto merit alone, and forget the marketing muscle afforded by the protection of a Big Name. After all, IBM seems to realise that the software marketplace is better off in the hands of the software publishers, and everyone ultimately benefited from this approach. Just take a look at the systems where the hardware manufacturer monopolises the software to see how uninspired many such approaches tend to be.

Thunderblade

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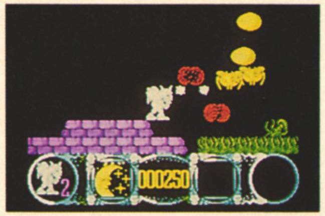
Hitman's Heyday

Rik Haynes previews six hot new releases, including a heroic Hewson hat-trick

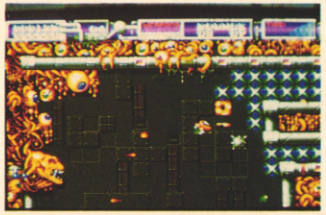
STORMLORD HEWSON

Raffaelle Cecco, creator of *Cybernoid*, *Cybernoid II* and *Exolon*, now gives you the chance to play *Stormlord*, in a mission to free the imprisoned fairies from the evil queen. It's a good job the action looks tougher than the scenario! Available soon on Spectrum, C64 and CPC, with ST and Amiga versions on their way later in the year.



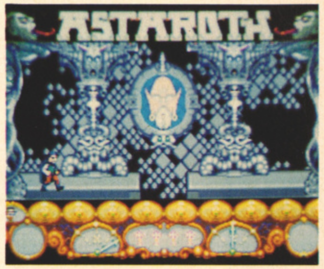
CYBERNOID II HEWSON

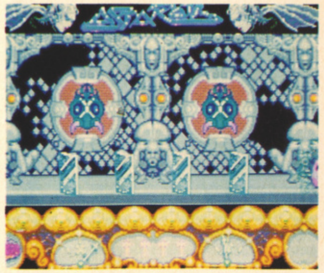
Already out on the 8-bits, ST and Amiga *Cybernoid II* is the sequel to *Cybernoid* (what else?), featuring extra levels, animated landscapes and Black Holes. The aim of the game is to rid the Federation storage depots from a bunch of marauding pirates using your latest Battlestar spaceship, equipped with such handy weaponry as bounce, seeker and tracker bombs.

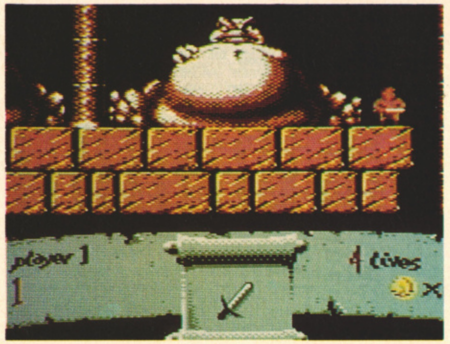


ASTAROTH HEWSON

Pete Lyon, graphic designer on many a Microdeal title, has taken some time off from the Cornwall-based company to produce the graphics on a new arcade adventure from Hewson. You play Ozymandis, a fearless brigand who sets out into a dark and hazardous labyrinth filled with mysterious traps and ferocious monsters in a bid to destroy Astaroth, the angel of death, and steal her hoard of precious and magical treasures. Out soon on ST and Amiga.







TYGER TYGER
FIREBIRD

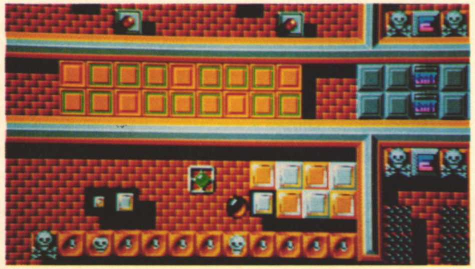
Fans of the C64 bulletin board Compunet will be pleased to know that Paul Docherty, alias Dokk, is currently working on the graphics for this "all-way" scrolling arcade adventure programmed by that old Netter, Gary Liddon.

As Sumo type Lance Tyger you'll have to battle your way through a mystical land ridden with monstrous beasties in an ongoing onslaught of obese obscenity.

To be released in the near future on Spectrum, C64 and CPC.

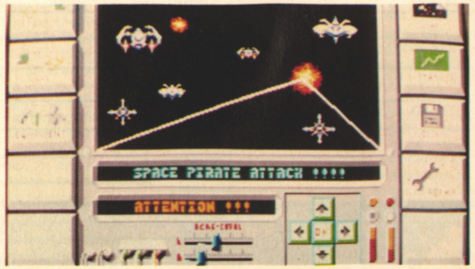
TITAN TITUS

Marking a departure from the more usual Titus offering of *Crazy Cars*-type game-playing, *Titan* lets you play an eight-way scrolling game of bat and ball. To be released shortly on C64, CPC, ST, Amiga and PC, with the Spectrum version following a little later.



STAG EAS

STAG is a space trading game concentrating on the survivors of an annihilated Earth, and their attempts to build a Space Trading Company in conjunction with a bunch of aliens. The trouble lies in the load of Space Pirates wanting to make a quick profit out of your hard endeavours. Out shortly on ST and Amiga.



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A la modem

Teaching your micro to use the phone can open up a whole new world: free software, bulletin boards, home banking, linkups to giant data banks...but first you need a modem. Peter Worlock explains.

Computer communications has always been one of those idealised dreams of personal computing.

When the electronic brains of science fiction posed a threat to mankind, their ability to link up with their brethren around the world was always taken for granted. And the wristwatch computer, linked by radio to larger systems, is another cliche of pulp SF and Saturday morning serials.

But while most aspects of personal computing have raced beyond the dreams of authors and film-makers, comms has so far failed to live up to expectation. The cause is not so much technical as economic. Unfortunately, while the trend in pricing of computers and software has been consistently downwards, the cost of using the phone has gone up and up.

However, provided you keep the costs in mind, communications can open up whole new areas of interest, as well as providing access to public domain software and many sources of instant advice.

Speed

Data transmission speeds are one of the fundamentals of communications and affect your choice of modem, and how you can use it.

Speeds are measured in two ways: baud rates and bits-per-second (bps). The two are usually used as if they were synonymous, but there are differences. Baud rates refer to the number of modulations per second, so only when one modulation equals one bit of data do baud and bps match (higher speed modems usually modulate much more than one bit at a time.)

However, for practical purposes baud and bps can be used more or less interchangeably.

The transmission rate that has been in use longest is 300 bps which equates to about 2,000 bytes or words per minute. At that rate, a comparatively short public domain program of 16K would take more than eight minutes to transmit, and a single screen from a dial-up database would need a full minute to be updated.

These speeds are obviously less than satisfactory, so the industry quickly made a jump to 1,200 bps – four times faster. The next "standard", already widely used, is to 2,400 bps and, having skipped 4,800 bps altogether, 9,600bps modems and services are beginning to appear.

The most commonly used speeds in the UK are usually referred to by the standards set by the Consultative Committee on International Telegraph and Telephone,thankfully known as the CCITT. These standards are:

V21	**300**
V22	**1,200**
V22bis	**2,400**
V23	**1,200/75**

V23 is an oddity employed by Prestel and since adopted by a few privately-run bulletin boards. The reason for the split-speed rate arose because of the nature of Prestel, which works on full-screen displays of data. A fast-ish transmission is needed to handle these and Prestel decided on 1,200 bps.

However, at the time 1,200/1,200 modems were rare and expensive, and using Prestel is more or less a one-sided conversation, so while the Prestel computer transmits at the faster rate it was decided that the user only needed a very slow transmission.

Faster speeds are not only desirable to cut down on the boredom factor (who wants to spend 15 or 20 minutes staring at a blank screen while downloading public domain software?). Many dial-up services charge a connection fee of so many pence per minute, and you're also paying British Telecom for every minute you use the phone. In communications, time is literally money.

Protocols

In order for two computers to talk to each other, they not only have to be transmitting and receiving data at an agreed speed, they also have to agree on the form the data will take. These factors are set by protocols.

The term protocol is used to cover various aspects of communications, often including the transmission speed, such as how many bits are data bits, whether start and stop bits will be used, what form of error-correction and whether synchronous or asynchronous transmission is to be employed.

In most of these cases, what's at stake is the real rate at which data is transmitted. As speeds increase, so does the risk of errors. Error-checking allows the two modems to watch for errors and have any dodgy blocks of data re-transmitted. But this obviously reduces the effective speed of data transfer, since much of the data might be sent twice.

• "A whole new world of free bulletin boards..."

Similarly, in synchronous transmission the two modems are sending and receiving data at preset intervals, removing the need for start and stop bits and therefore reducing the two-bit overhead for each character, speeding up transmission by that amount.

Another variable in the transmission equation is half and full-duplex. In half-duplex, the two modems take it in turns to talk, whereas full-duplex allows each modem to talk and listen at the same time. If an error occurs in half-duplex the receiving modem has to wait until the transmitting modem stops before it can interrupt and request re-transmission. Full-duplex allows the modems to handle error-checking and handshaking without stopping the flow of data.

Extra features

Many modems now support a number of useful features that can make communicating easier. Early modems, and some cheaper models today, require you to dial the number, wait for the connection to be made, and then quickly cut in the modem to take over the communication. Models featuring auto-dial do all this automatically.

The counterpart to auto-dial is obviously auto-answer, but this is less useful unless you're planning to run your own bulletin board or you expect a lot of incoming calls to your computer.

More desirable is a modem that provides a way of monitoring its status. This usually takes the form of a series of LEDs that show what's happening at various stages in the comms process; more expensive models provide a small LCD screen.

Technobabble

A weekly assault on computer jargon

Comms

Acoustic coupler
A special form of modem that physically connects the phone to the computer by holding the mouth- and ear-pieces in rubber cups.

Prone to noise problems and only works with old-style handsets, not the modern Trimphone or slimline models.

On-line
General term relating to the process of computer comms. A computer currently operating with a modem is said to be "on line", and a dial-up database like Prestel is called an "on-line service".

Card modem
Also called internal modems, these models contain the modem electronics on a PC-compatible expansion board. The advantage for PC owners is a lower cost, since they have no casing and don't need a connecting cable.

Error-correction
Essential feature, particularly at higher speeds. There are several "standards" in error-correction but at speeds up to 2,400, Xmodem and Kermit are the most common, while for higher speeds MNP protocols are becoming widespread.

Software

The key to comms software is that the program should match the features provided by your modem. Obviously, there's little attraction in acquiring a 2,400 bps modem and then buying software that will only support 1,200 bps transmission.

But a much greater problem is gaining control of special features of the modem. Things like auto-dial and automatic setting of protocols (which can allow your modem to detect and automatically match the settings used by another modem) are hardware features you won't be able to use unless your software can specifically control them.

What's the fuss about?

With your micro you can access a variety of services over the phone. You can do bank transactions, book holidays, access information instantly onto your screen through data banks and organisations like Prestel, even get 'public domain' software over the phone free from user clubs and 'bulletin boards'. Such software varies from the ridiculous to the sublime but at its best can rival commercial programs – all for the price of a phone call.

Apart from the obvious requirements of a computer and a telephone, you need two things: a modem and some suitable software.

The modem is an electronic "black box" that sits between the computer and the telephone and its job is to convert the signals from your computer into a form that can be transmitted over the phone lines, and to reverse the process with incoming data. This process is known as MOdulation-DEModulation, hence the term modem.

Virtually all modems connect to your computer via an RS232 serial interface. Some machines (Amstrad PCW, Commodore 64, early Spectrums etc.) require the interface to be bought separately.

miracom
Miraplex TD

• No computer is an island – not with a modem

The most common set of features are now provided by manufacturer Hayes in the Hayes AT command set (AT stands for ATtention and has nothing to do with the IBM AT). Many American software packages assume (or work best with) a Hayes-compatible modem, so watch out for this.

Another potential stumbling block specifically affecting British users is the viewdata system used by Prestel/Micronet, which employs a series of pre-defined block characters. The one computer to come equipped with the viewdata character set is Acorn's BBC series, so other computers wishing to use Prestel need special comms software.

There are two approaches to the problem. The first is to acquire software that provides an alternative character set to give you viewdata-compatibility. A second type of software deals with the problem by stripping out non-standard characters and substituting one of the standard ASCII graphics (often an asterisk). The catch with the latter approach is that you lose out on graphic screens.

Beyond these basic features, software can provide a multitude of facilities that make communications easier and more powerful.

For example, if your modem has auto-dial, many software packages provide a phone book in which you can store the numbers of the dial-up services you us, and which can be automatically called by the computer. Other programs take this idea further and, having established a connection with the remote system, type your log-on number, password and any other basic information needed to use the system.

Another very useful feature is the ability to use some aspects of your comms set-up in background mode. In other words, to be able to have your computer transmit or accept data and store it while you get on with some other task. ●

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Who ya gonna call?

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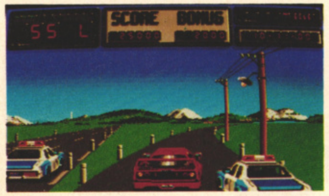
This week sees the arrival of *Dragon's Lair* – the six-disc extravangaza bringing cartoon quality graphics to an Amiga near you.

Otherwise, apart from the dubious merits of a strip poker sim (What do you think? Should we drop 'em ?), it's all pretty much violence and aggression of one sort or another. But, take it from us, this is the state of play with 90% of releases. We've got the scars to prove it.

CRAZY CARS 2

TITUS

ST • £19.99dk
Due out on Amiga, PC, CPC, Spec, C64



• Watch you don't cop it from the crazy cops

Somewhat outrun by *Out Run* when it appeared on 16-bit formats last year, *Crazy Cars* would have nevertheless given the most overrated conversion of all time a run for its money. Here's the sequel, once again released ahead of its rival's successor – *Outrun Europa*.

● GAMEPLAY

You take the wheel of a Ferrari F40 in a race against time, and storm across 4 states of the States dodging cop cars attempting to drive you into oblivion.

You have a choice of two gears, a very responsive mouse, joystick, keyboard control and onboard radar to help you locate the cops and the route ahead of you. There are turnoffs all along your route. Miss the right one, and it usually means fatally crashing into state boundary barriers.

Hitting F2 drops down a map window which can be scrolled to find the start and finish points of your route.

On successfully crossing a state border you collect bonuses to add to your score. And...er...that's it. Apart from actually keeping the car on the road on course of course.

● GRAPHICS AND SOUND

Crazy Cars 2 is pretty impressive in the road wars graphics dept. Background scrolling is smooth and sprite definition first class. The surround-screen meters and instrumentation are also slick and sharp. A minor letdown is the irritating screech of the Ferrari's tyres as you enter another out-of-control spin.

● OTHER VERSIONS

Amiga, PC and 8-bit formats will all be available by mid/late February.

● EXPRESS VERDICT

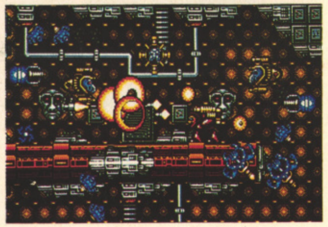
Great fun and well presented, but you get the feeling it's a little too easy to complete the 4 levels and it would benefit from, say, another 40. It hangs in well there with the competition but is that really saying a great deal?

✪ ✪ ✪ **Andy Storer**

CUSTODIAN

HEWSON

ST • £19.99dk
Also on Amiga



• Tasty graphics matched by strong playability

***Custodian* has been designed and programmed by Chris Hinsley and Nigel Brownjohn – the team also responsible for the ever elusive *Verminator* – and is a mixture of shoot-em-up and exploration-em-up promising some attractive audio-visuals and fun gameplay.**

● GAMEPLAY

You're the protector of nuclear-powered tombs here, in an ongoing battle against marauding alien energy-parasites, so its a good job you've got the chance to arm yourself with some serious weaponry ranging from 10mm rocket shells to megaclear smart bombs.

Getting down to play, you control a strange and mean-looking head on legs complete with jet-pack. You whizz around an eight-way scrolling complex destroying any aliens daring to challenge you, while searching for alien pods to take to the alien pod annihilation chamber (*Where else? – Ed*) for orderly disposal.

As you progress through the scenery, you'll discover not only teleports (guess what these do) but also ammunition silos which will replenish your stocks of ammo – provided you've got enough dosh.

● GRAPHICS AND SOUND

Custodian has impeccable audio-visual presentation from start to finish. Graphics are very pleasing with colourful and well-designed sprites and backdrops which move smoothly around the screen. Your sprite is worthy of particular note as it's so weirdly-shaped and wonderfully animated.

Audio consists of the usual laser-sound spot-effects, and are of a good standard, thankfully not distracting your attention from the business of blasting.

● OTHER VERSIONS

Amiga *Custodian* is likely to be almost identical to its ST counterpart, albeit with audio improvements.

● EXPRESS VERDICT

Custodian is a fast-paced, action-packed game – an unusual combination for an exploration game – and all the more refreshing for it. With its enlivening in-screen games and options, good quality audio-visuals and absorbing gameplay, *Custodian* certainly deserves consideration for purchase by both exploration and shoot-em-up fans alike.

✪ ✪ ✪ ✪ **Rik Haynes**

TEENAGE QUEEN

INFOGRAMES

Amiga • £19.95dk
Due out on ST, PC

Infogrames' latest is light years away from the spacey sci-fi of *Captain Blood* and *Purple Saturn Day* and the combat capers of *Hostages*, *Wanted* and *Action Service*. It's a down to earth strip poker sim.

● GAMEPLAY

The teenage queen in question giggles her way through a series of hands as you attempt to amass enough credits to take off all her clothes.

Every hundred or so points you score she adopts another suggestive pose revealing a little more of her body. Thankfully, she plays quite a mean game of poker too and is not averse to bluffing.

The cards you're dealt always allow for a good hand to be made – there's no boringly wide distribution of cards – and you don't need a great deal of brain-power to see the obvious one, two or three cards you need to replace. As such, gameplay is pretty gripping.

● GRAPHICS AND SOUND

There are ten hand-drawn screens of the Queen in various positions and the look is distinctly cartoon-like. Actual gameplay is clearly depicted by icon-driven windows. Sound is confined to digitised giggles which are distinctly French – there's no way an English rose could sound so innocently filthy.

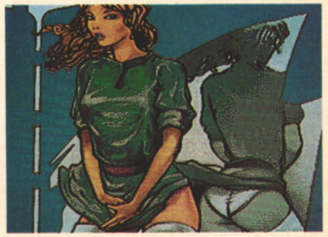
● OTHER VERSIONS

The ST and PC versions will be released later this month, but as are yet unseen.

● EXPRESS VERDICT

Definitely one of the better strip poker sims but then we can't be seen to encourage this kind of product can we? Let's just say the poker play is okay.

✪ ✪ ✪ **Andy Storer**



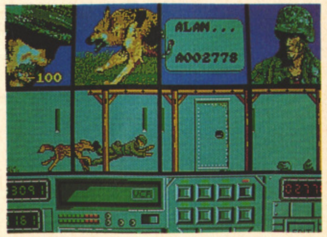
• Send in those letters, girls...

ACTION SERVICE

COBRASOFT/INFOGRAMES

Amiga • £19.95dk
Also on ST, PC
Due out soon on C64

***Action Service* throws you into the hectic world of a cobra commando about to face untold dangers, strenuous training exercises and enemy held territory. It's all in the name of duty, for the honour of the regiment and the pay-cheque at the end of the month...**



• Nice video (displays), shame about the game

● GAMEPLAY

During play you travel over a horizontally-scrolling landscape riddled with traps, enemy troops and obstacles which you have to negotiate while being 'screamed' at by your superior officers, who look down at you from the top TV-displays. Luckily, like any respectable commando you can summon a wide variety of agile manoeuvers and destructive weapons to aid you in your mission of no-mercy.

As an added bonus, *Action Service* contains not only a video replay option, but also the chance to construct and edit your own scenarios.

● GRAPHICS AND SOUND

Audio-visuals are straight translations from the ST version – although the sound is a little crisper – comprising simplified, uninteresting and inadequate sprites and backdrops, and sampled sound-effects and speech which are all below par.

The only innovative visual aspect is the dividing of the display into eight mini TV-displays, though this was probably implemented because it cuts down on the proportion of the screen being scrolled.

● OTHER VERSIONS

ST *Action Service* performs almost identically to the Amiga version, but suffers from slightly inferior audio quality. The C64 version is nearing completion and should be available by the end of January.

● EXPRESS VERDICT

Action Service is another in a long line of highly original games sourced from France, but unlike its associates – *Captain Blood* and *Purple Saturn Day* – it suffers from low quality audio-visual presentation. This factor, coupled with its dull and repetitive gameplay, ultimately leads to its dubious worth as a purchase. Hopefully, *Action Service II* will provide improvements in audio-visuals and gameplay.

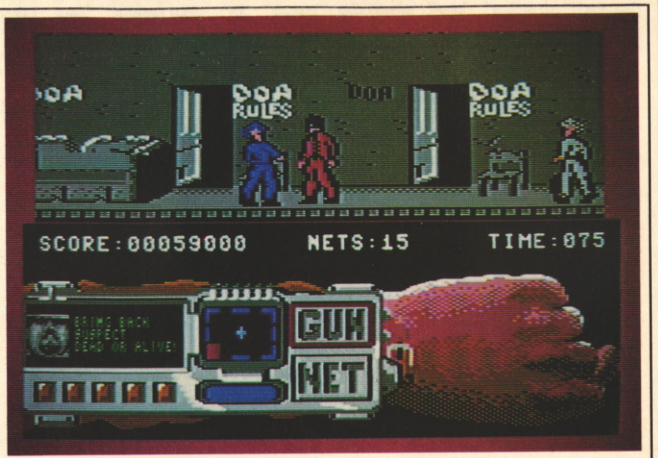
✪ ✪ **Rik Haynes**

☞

TECHNO COP

GREMLIN

Amiga • £19.99dk
Also on Spec, C64, CPC, ST
Out soon on PC



• C64: Taking on the scum of the city

***Techno Cop* places you in control of a futuristic copper, with a just a bit of techno, assigned to wade through the scum of the city, taking out any criminals that dare halt your progress for truth, justice and the occasional bribe.**

● GAMEPLAY

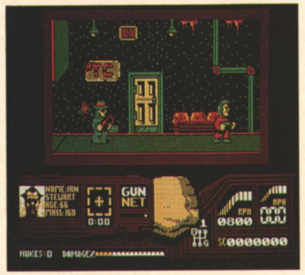
The game is split into two sequences. The first sees you in your VMAX twin turbo nutter interceptor (car, to you and me) with an open road ahead and a cannon on the roof rack.

As you travel down the road, you're notified of yet another criminal offence, with the digitised face and statistics of the perpetrator appearing on your dashboard. So it's a mad rush to the scene of the crime in order to do a bit of apprehension, destroying any Sunday drivers along the way while trying not to scratch the paintwork.

Then it's on to the other sequence, with you leaving the comfort of your car to venture out into the depths of the city, using your wrist command computer to track down the criminal and bring 'em back dead or alive. Of course, having a .88 magnum (it'll blow your body clean off, punk) and a net gun will help your hopes of respect from any thugs (or innocent bystanders) along the way.

Once that crim is out of the way, it's back to the road again, in your ongoing mission to clean up the city. Unfortunately, the opposition gets tougher as you play through the game. So it's lucky you can add some optional extras to your car – like a nuclear bomb. Overkill, or what?

The road sequence plays in a similar fashion to *Roadblasters*, while the capture sequence feels like another Gremlin release, *Death Wish Three*. This diversity helps the game along, but ultimately lasting interest just isn't there.

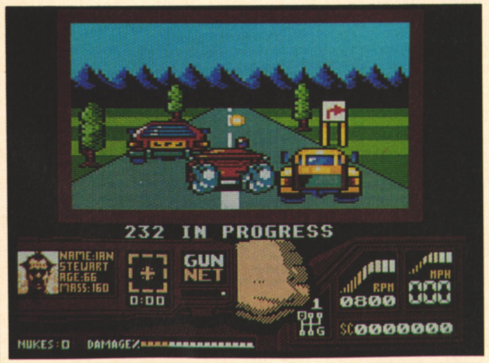


• ST: Running away from a mysterious character in a trench-coat...

● GRAPHICS AND SOUND

Audio-visuals are of a high standard with wonderfully colourful, nicely-designed sprites and backdrops in both the road and the capture sequences. Audio consists of standard sampled spot-effects for the car engine, gun, explosions, etc but all are of good quality.

Perhaps the worst audio-visual element is the way the criminals die during the capture sequence – they actually explode in a flood of blood, only to be replaced by a corpse helplessly spluttering on the floor. Gratuitously too sick.



• ST: Speeding down the highway, dodging the Sunday drivers

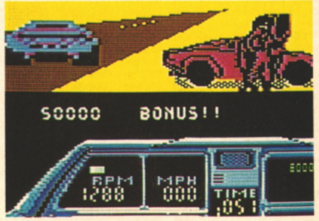
● OTHER VERSIONS

ST *Techno Cop* matches Amiga graphics but has inferior audio quality. The PC version is on its way and should be here by the beginning of February. C64 *Techno Cop* performs the best out of all the 8-bits with colourful, slightly blocky visuals and a good range of sound spot-effects. Next in line is the Spectrum version which is somewhat less colourful and noisy but still manages a playable game. Last, and by every means least, is the CPC version which moves along at the speed of a tortoise with four broken legs, and produces audio which sounds like it's being played from a goldfish bowl.

● EXPRESS VERDICT

Techno Cop has all the hallmarks of a typical Gremlin game – bright and breezy graphics, non-taxing gameplay with simple aims and tasks, and loud but apt sound-effects. It should appeal to the younger gamester, although parental guidance would perhaps be prudent because of the violent demise of the criminals in the capturing stages of the game.

✪ ✪ ✪ **Rik Haynes**



• C64: Posing outside your turbonuttermotor

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THE RELEASE SCHEDULE

AMIGA

20000 Leagues Under The Sea	19.95	Out Now	Coktel Vision
Amiga Gold Hits 1	24.99	Out Now	U.S.Gold
Baal	19.95	Mid Jan	Psygnosis/Psyclapse
Barbarian II	19.99	February	Palace
Batman - Caped Crusader	24.95	Late Jan	Ocean
Billiards	19.95	Mid Jan	Ere/Infogrames
California Games	24.99	Out Now	Epyx/U.S.Gold
Captain Fizz	14.95	Out Now	Psygnosis/Psyclapse
Circus Games	24.95	Out Now	Tynesoft
Cosmic Pirate	19.99	Jan/Feb	Outlaw
Crazy Cars II	24.99	End Feb	Titus
Dark Fusion	19.99	February 7	Gremlin
Deluxe Paint II & Deluxe Print	69.95	Out Now	Electronic Arts
F-16 Falcon	29.99	Out Now	Mirrorsoft
Freedom	19.95	Out Now	Coktel Vision
Galactic Conqueror	24.95	Out Now	Titus
Galdregon's Domain	19.99	January 27	Pandora
Gary Lineker's Hotshots	19.99	February 14	Gremlin
Gauntlet II	19.99	Out Now	U.S.Gold
Hellbent	19.95	Out Now	Novagen
Helter Skelter	14.95	Out Now	Audiogenic
Hotball	24.95	Out Now	Satory
Incredible Shrinking Sphere	24.99	January 25	Electric Dreams
International Karate+	24.99	Imminent	System 3
Kennedy Approach	24.95	Imminent	Microprose
Manhattan Dealers	24.95	Out Now	Silmarils
Purple Saturn Day	24.95	Imminent	Exxos
Shoot-Em-Up Construction Kit	24.99	Jan/Feb	Outlaw
Super Hang-On	24.99	End Jan	Electric Dreams
Superman - Man of Steel	24.95	Out Now	Tynesoft
Technocop	19.99	Out Now	Gremlin
Teenage Queen	19.95	January	Infogrames
The Munsters	19.99	Out Now	Again Again
Tiger Road	24.99	Imminent	Capcom/U.S.Gold
Track Suit Manager	19.99	Out Now	Again Again
TV Sports Football	29.99	Out Now	Cinemaware
Ult. Sound Tracker	39.95	Out Now	E.A.S.
Wanted	19.95	Out Now	Infogrames
War in Middle Earth	24.99	February	Melbourne House
Zero Gravity	19.95	Out Now	E.A.S.

AMSTRAD CPC

Afterburner	D	14.99	Out Now	Activision
Afterburner	T	9.99	Out Now	Activision
Barbarian II	D	14.99	February	Palace
Barbarian II	T	9.99	February	Palace
Chuck Yeager's Advanced Flight Trainer	D	14.95	Late Feb	Electronic Arts
Chuck Yeager's Advanced Flight Trainer	T	8.95	Late Feb	Electronic Arts
Crazy Cars II	D	14.99	Mid Feb	Titus
Crazy Cars II	T	9.99	Mid Feb	Titus
Dark Fusion	D	14.99	February 7	Gremlin
Dark Fusion	T	9.99	February 7	Gremlin
Galactic Conqueror	D	14.95	Out Now	Titus
Galactic Conqueror	T	9.95	Out Now	Titus
Gary Lineker's Hotshots	D	14.99	February 14	Gremlin
Gary Lineker's Hotshots	T	9.99	February 14	Gremlin
Incredible Shrinking Sphere	D	14.99	January 25	Electric Dreams
Incredible Shrinking Sphere	T	9.99	January 25	Electric Dreams
Mini Office 1	T	2.99	Out Now	Summit
R-Type	D	14.99	Out Now	Electric Dreams
Technocop	D	14.99	Out Now	Gremlin
Technocop	T	9.99	Out Now	Gremlin
The Archon Collection	D	14.95	Out Now	Electronic Arts
The Archon Collection	T	8.95	Out Now	Electronic Arts
The Munsters	D	14.99	Out Now	Again Again
The Munsters	T	9.99	Out Now	Again Again
War in Middle Earth	T	9.99	January 19	Melbourne House

AMSTRAD PCW

Fish!	24.99	January 25	Rainbird

ARCHIMEDES

Fish!	24.99	January 25	Rainbird

BBC

Football Director	D	12.99	Out Now	CDS
Football Director	T	9.99	Out Now	CDS
Mini Office 1	T	2.99	Out Now	Summit

ATARI ST

20000 Leagues Under The Sea	19.95	Out Now	Coktel Vision
Barbarian II	19.99	January	Palace
Batman - Caped Crusader	19.95	Out Now	Ocean
Billiards	19.95	Mid Jan	Ere/Infogrames
Bismark	24.99	Out Now	PSS
Captain Fizz	14.95	Out Now	Psygnosis/Psyclapse
Circus Games	24.95	Out Now	Tynesoft
Cosmic Pirate	19.99	Jan/Feb	Outlaw
Crazy Cars II	19.99	Out Now	Titus
Dark Fusion	19.99	February 7	Gremlin
Dragonscape	19.95	February 16	Software Horizons
F-16 Falcon	24.99	Out Now	Mirrorsoft
Federation Of Free Traders	29.99	January 30	Gremlin
Freedom	19.95	Out Now	Coktel Vision
Galactic Conqueror	19.95	Out Now	Titus
Galdregon's Domain	19.99	January 27	Pandora
Game Over II	24.95	Out Now	Dinamic
Gary Lineker's Hotshots	19.99	February 14	Gremlin
Hellbent	19.95	Out Now	Novagen
Helter Skelter	14.95	Out Now	Audiogenic
Hotball	24.95	Out Now	Satory
Incredible Shrinking Sphere	19.99	January 25	Electric Dreams
Iron Lord	24.99	Early Feb	Ubi Soft
Joan Of Arc	19.99	Out Now	U.S.Gold
Manhattan Dealers	19.95	Out Now	Silmarils
Night Hunter	19.99	Out Now	Ubi Soft
Purple Saturn Day	24.95	Out Now	Exxos
Spitfire 40 & Strike Force Harrier	24.99	Out Now	Mirrorsoft
Superman - Man of Steel	24.95	Out Now	Tynesoft
Technocop	19.99	Out Now	Gremlin
Teenage Queen	19.95	January	Infogrames
The Munsters	19.99	Out Now	Again Again
Tiger Road	19.99	Imminent	Capcom/U.S.Gold
Track Suit Manager	19.99	Out Now	Again Again
Wanted	19.95	Out Now	Infogrames
War in Middle Earth	24.99	February	Melbourne House
Zany Golf	24.95	January 25	Electronic Arts
Zero Gravity	19.95	Out Now	E.A.S.

COMMODORE 64/128

Action Service	D	14.95	January	Cobra/Infogrames
Action Service	T	9.95	January	Cobra/Infogrames
Circus Games	D	14.95	Out Now	Tynesoft
Circus Games	T	9.95	Out Now	Tynesoft
Dark Fusion	D	14.99	February 7	Gremlin
Dark Fusion	T	9.99	February 7	Gremlin
Exploding Fist +	D	12.99	Out Now	Firebird
Exploding Fist +	T	9.99	Out Now	Firebird
Fish!	D	19.99	January 25	Rainbird
Gary Lineker's Hotshots	D	14.99	February 14	Gremlin
Gary Lineker's Hotshots	T	9.99	February 14	Gremlin
Grand Prix Circuit	D	14.95	January 19	Accolade/EA
Grand Prix Circuit	T	9.95	January 21	Accolade/EA
Hostages	D	14.95	Mid Jan	Infogrames
Hostages	T	9.95	Mid Jan	Infogrames
Incredible Shrinking Sphere	D	14.99	January 25	Electric Dreams
Incredible Shrinking Sphere	T	9.99	January 25	Electric Dreams
Iron Lord	D	19.99	Early Feb	Ubi Soft
Iron Lord	T	12.99	Early Feb	Ubi Soft
Jordan v Bird: One on One II	D	14.95	Out Now	Electronic Arts
Mini Office 1	T	2.99	Out Now	Summit
Project Firestart	D	14.95	January 20	Electronic Arts
R-Type	D	14.99	Out Now	Electric Dreams
Rocket Ranger	D	14.99	January	Cinemaware
Serve and Volley	D	14.95	Out Now	Accolade/EA
Serve and Volley	T	9.95	Out Now	Accolade/EA
StarRay	D	14.95	Out Now	Logotron
StarRay	T	9.95	Out Now	Logotron
Street Gang	T	1.99	January 25	Players
Superman - Man of Steel	D	14.95	Out Now	Tynesoft
Superman - Man of Steel	T	9.95	Out Now	Tynesoft
T.K.O.	D	14.95	Out Now	Accolade/EA
T.K.O.	T	9.95	Imminent	Accolade/EA
Tank Attack	D	14.99	Out Now	CDS
Tank Attack	T	12.99	Out Now	CDS
Technocop	D	14.99	Out Now	Gremlin
Technocop	T	9.99	Out Now	Gremlin
The Double	T	2.99	Out Now	Summit
The Munsters	D	14.99	Out Now	Again Again
The Munsters	T	9.99	Out Now	Again Again
Tomcat	T	1.99	January 25	Players
War in Middle Earth	D	19.99	February	Melbourne House
War in Middle Earth	T	9.99	February	Melbourne House
Word Style	D	19.95	Out Now	Supersoft
Word Style	T	17.95	Out Now	Supersoft

ELECTRON

Mini Office 1	T	2.99	Out Now	Summit

IBM PC & COMPATIBLES

20000 Leagues Under The Sea	5.25	19.95	Out Now	Coktel Vision
Abrams Battle Tank	3.5+5.25	24.99	February 15	Electronic Arts
Battlechess	3.5	24.95	Out Now	Interplay/EA
Battlechess	5.25	24.95	Out Now	Interplay/EA
Billiards	5.25	19.95	February	Ere/Infogrames
Circus Games	5.25	24.95	Out Now	Tynesoft
Crazy Cars II	5.25	24.99	End Feb	Titus
F-16 Combat Pilot	5.25	24.95	End Jan	Digital Integration
Fast Break	5.25	24.95	January 26	Accolade/EA
Freedom	5.25	19.95	Out Now	Coktel Vision
Galactic Conqueror	5.25	24.95	Out Now	Titus
Grand Prix Circuit	3.5	24.95	Out Now	Accolade/EA
Grand Prix Circuit	5.25	24.95	Out Now	Accolade/EA
Halls of Montezuma	5.25	24.95	Out Now	SSG
Hostages	5.25	24.95	Mid Jan	Infogrames
Manhattan Dealers	5.25	24.95	Out Now	Silmarils
Offshore Warrior	5.25	24.99	Out Now	Titus
Rack'em	5.25	24.95	Out Now	Accolade/EA
Speedball	3.5+5.25	24.99	Out Now	Image Works
Star Goose	3.5+5.25	24.95	Out Now	Logotron
StarRay	3.5+5.25	24.95	Out Now	Logotron
Strikefleet	3.5	24.95	Out Now	Electronic Arts
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The Bard's Tale II	3.5	24.95	Out Now	Electronic Arts
The Bard's Tale II	5.25	24.95	Out Now	Electronic Arts
The Train	5.25	24.95	Out Now	Accolade/EA
Times of Lore	5.25	24.95	Imminent	Microprose
War in Middle Earth	5.25	24.99	February	Melbourne House
Wasteland	3.5+5.25	24.95	February 1	Electronic Arts
Zany Golf	3.5+5.25	24.95	Out Now	Electronic Arts

MACINTOSH

Fish!	34.99	February	Rainbird

MSX

The Munsters	T	9.99	Out Now	Again Again

SPECTRUM

Barbarian II	T	9.99	Out Now	Palace
Captain Blood	T	9.95	Mid Jan	Exxos
Circus Games	T	8.95	Out Now	Tynesoft
Dark Fusion	T	7.99	February 7	Gremlin
Emlyn Hughes International Soccer	T	9.95	Imminent	Audiogenic
Exploding Fist +	T	7.99	Out Now	Firebird
Fire & Forget	T	8.99	Out Now	Titus
Gary Lineker's Hotshots	T	7.99	February 14	Gremlin
Incredible Shrinking Sphere	T	9.99	January 25	Electric Dreams
Mini Office 1	T	2.99	Out Now	Summit
Skateball	T	8.99	Out Now	Ubi Soft
Street Gang	T	1.99	January 25	Players
Superman - Man of Steel	T	8.95	Out Now	Tynesoft
Tank Attack	T	12.99	Out Now	CDS
Technocop	T	7.99	Out Now	Gremlin
The Archon Collection	T	8.95	Out Now	Electronic Arts
The Double	T	2.99	Out Now	Summit
The Munsters	T	9.99	Out Now	Again Again
War in Middle Earth	T	9.99	January 19	Melbourne House

SPECTRUM+3

Barbarian II	D	14.99	Imminent	Palace
Captain Blood	D	14.95	Mid Jan	Exxos
Cash Book	D	17.95	Out Now	Supersoft
Dark Fusion	D	12.99	February 7	Gremlin
Emlyn Hughes International Soccer	D	14.95	Imminent	Audiogenic
Fish!	D	15.99	January 25	Rainbird
Gary Lineker's Hotshots	D	12.99	February 14	Gremlin
Icon Graphix 128	D	17.95	Out Now	Audiogenic
Instant Recall	D	19.95	Out Now	Supersoft
Mini-Putt	D	14.95	January 30	Accolade/EA
Skateball	D	14.99	Out Now	Ubi Soft
Technocop	D	12.99	Out Now	Gremlin
The Archon Collection	D	14.95	Out Now	Electronic Arts
The Munsters	D	14.99	Out Now	Again Again

Out Now = Released within the last month *Imminent* = Expected at time of publication

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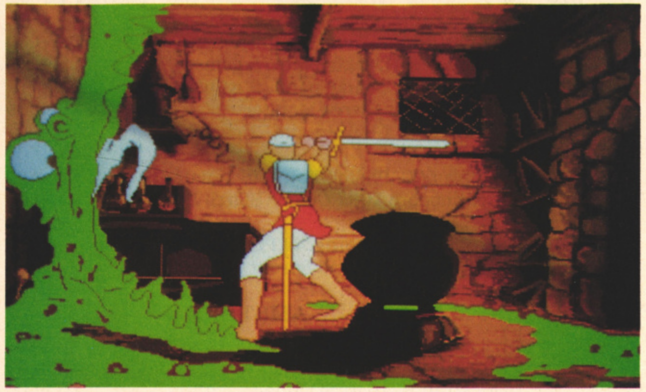
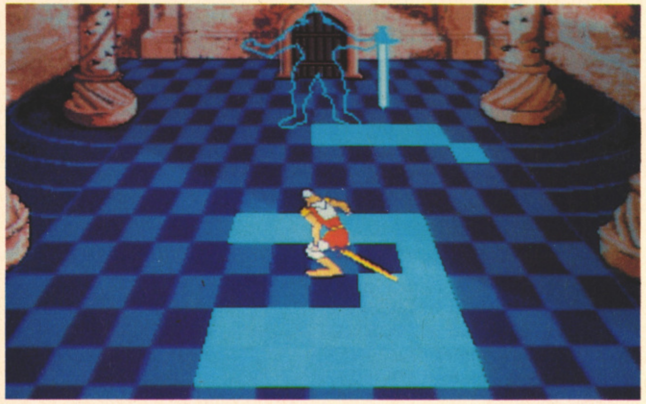
DRAGON'S LAIR





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In the last few weeks the Amiga has been blessed with two games – *Roger Rabbit* and *Sword of Sodan* – which contain the most stunning audio-visuals ever produced in any game, for any micro computer.

Now *Dragon's Lair* has been released, and it audio-visually out-performs even these Amiga releases to such an extent that you really can't believe it's the Amiga producing them, and not the coin-op machine itself.

● GAMEPLAY

The game is set in the time of knights, dragons and damsels in distress. You are Dirk the Daring who has to rescue the fair Princess Daphne from the evil clutches of Singe the Dragon.

The simple scenario is matched by equally simple gameplay because what this boils down to is a form of interactive cartoon. As Dirk enters a location, you have to make a decision on what he should do next, like moving left or right, unleashing his sword, etc. If you make the right judgement, at the right time you'll progress onto the next location. If you don't, you'll lose one of your three lives.

Visual clues will help your final decision, but there are also a myriad of traps and creatures which spell instant disaster for you if you hesitate.

Once a location has been mastered, you can use the same technique over and over again. What drives you on in this game is the desire to encounter a new location, or finally achieve your aim in rescuing the damsel in distress, Princess Daphne.

● GRAPHICS AND SOUND

Anything we write here will simply fail to convey the superlative visuals in this game. Suffice to say that they're the best we've seen in any micro computer game.

The original coin-op was a laser disk game containing the Disney-esque drawings, characterisations and animations of Don Bluth (an ex-Disney employee) and his team, and could quite easily have been transferred to movie format. It's surprising therefore, that these visuals have been – as near as – perfectly captured by Amiga.

The backdrops appear to have been digitised from the original laser disks, with the accurate "hand-drawn" characters then being superimposed on top. There are no sprites in this game; what you see are screens played in rapid succession giving the illusion of animation – just like in the movies. So you can forget all those 16x16 sprites from other games, and enjoy these huge, flicker free animations before your very eyes.

Audio too is excellent, although to a lesser degree, but it does help to enliven the atmosphere as sampled sound-effects thunder their way through the speakers and into your ears.

● OTHER VERSIONS

No chance. It would be such an impossibly tough job to emulate the Amiga's superb graphics and sound hardware that any other micro conversions simply wouldn't compare. But then again, we'd love to be proved wrong...

● EXPRESS VERDICT

Dragon's Lair is the nearest approach we've seen to the perfect coin-op conversion on any micro computer. It captures not only the atmosphere of its parent but also duplicates the coin-op's gameplay and superlative audio-visuals.

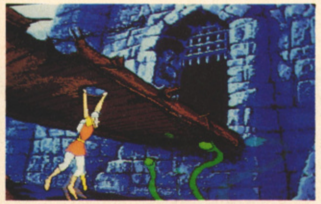
But performance like this comes at a price. It only works on 1Mb Amigas and costs a rather extravagant £45. For the superb results *Dragon's Lair* gives you this is still worthwhile, but the ultimate price to pay is time. You spend about twice as long loading the next section of the game than you do actually playing it. This is very frustrating and can bore you to tears at times as you wait for the next screen to come up.

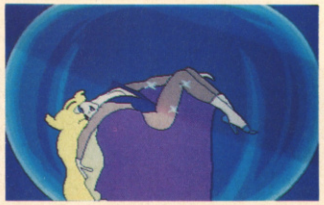
If you can forgive these faults and ignore the limited gameplay, a criticism levied at its coin-op parent as well, *Dragon's Lair* will provide you with not so much a game, more an experience. This is one of those programs which sells Amigas by playing to its strengths. It will make owners of other micros not just green, but completely sick with envy.

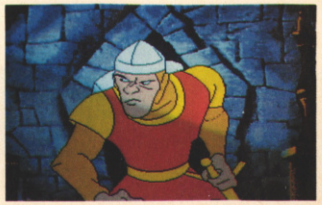
Amiga owners everywhere, whether or not you purchase *Dragon's Lair*, you'd be foolish not to ask for a demonstration of it the next time you visit your local software dealer. This is the Amiga at its best.

✪✪✪✪✪

Rik Haynes







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TECH TIPS

The place for your questions and suggestions

HELP!
Comm-fusion

I have recently bought a Commodore 128 and have seen in magazine adverts refering to modems. I would be grateful if you could answer some questions about them.

What are modems, and can I use them with my TV? What price do they start at, what would I use them for, and where can I get one?

B A Stephens, High Wycombe, Bucks

• Phew! A bit of a tall order that one, B A, and rather more than we have room for here. But never let it be said that *Express* spurned a reader in distress.

Turn to this week's *Learning Curve* and you'll find a complete introduction to modems, baud rates and all the other arcana of computer communications.

HELP!
Basic understanding

I would like to humbly ask your advice on a small matter. I am new to computers and programming, but I would like to learn Basic on my new 520ST.

I understand the version of Basic on the language disk is a bit cumbersome, so I was wondering if you could recommend a better version, particularly for a novice like myself.

Nigel O'Neill, St Albans, Herts

• You're right – ST Basic is a bit of a loser, even though Atari is now including a slightly improved version which fixes some of the bugs and shortfalls of the original. Not recommended.

There are three good alternatives.

First, Computer Concepts' *FastBasic*. In technical terms, this has a lot to commend it, being a close relative of BBC Basic and including many features from that earlier language, including Procedures and an in-line assembler. It was also the most popular alternative for a while, so there are lots of books available and some of the ST-specific magazines carry a lot of articles on *FastBasic* programming.

Against that, Computer Concepts has more or less given up on the ST, so the question of on-going support is open to doubt. *FastBasic* is available for around £35 on disk or £70 in cartridge format.

Second, *GFA Basic* from Glentop is a very unusual implementation of Basic. It includes some very powerful commands and functions, but many of these are implemented in a non-standard way. There's nothing really wrong with this, but wherever possible in computing it's usually better to stick with standards.

GFA Basic is very fast, and can be speeded up further with the use of the additional compiler, which gives you the added bonus of being able to produce standalone programs that can be run without loading Basic first. The interpreter and compiler cost around £35 each, but to use the compiler you need the interpreter too, which makes it a little expensive.

The most recent addition to the ST's repertoire of Basics is HiSoft's compiler. This is available in two versions: *Power Basic*, which costs £50; and *Hisoft Basic*, which includes extra facilities for £80. Both are based on the industry-standard *Microsoft Basic* on the IBM PC (which has been closely implemented on the Macintosh and Amiga) so there is lots of support in terms of books and magazine articles. Our sister magazine *ST/Amiga Format* publishes regular tutorials for *Hisoft Basic* – although as a beginner you might struggle with books since they are not dedicated to your machine.

Because it's a compiler you also get very fast, standalone programs.

I'd probably come down in favour of *Hisoft Basic* (or *Power Basic* if you're on a tight budget), although all three are very good products.

HELP!
Bit worried

Can I just say I am definitely impressed with the new magazine (go right ahead – ed.) I like to hear the news and don't use program listings. I was especially happy with the "Future of Computing" article.

What really puzzles me is this talk of 8-bit and 16-bit, and where do PCs fit in? Perhaps you could explain why MS-DOS is still hanging in there too.

I work with an Amstrad PC1512 and some 1640s and I can't understand why anyone uses PCs when C64s are easier to use. Please explain everything before I pull all my hair out.

Hugo Minney, Witton Gilbert, Co Durham

• Hope you saw Learning Curve in Express issue 5, Hugo. It should have answered your questions about 8-bit and 16-bit, and so on. As to why MS-DOS is still hanging in there, the answer is really very simple. It's because most companies have millions of pounds invested in MS-DOS PCs and even more millions in MS-DOS software, and they're not about to throw it out and buy a whole new shooting match.

MS-DOS is a long way from the perfect operating system, but it works. It's been around for a long time now, its faults are understood, and whatever you want to do with a computer in business, you can get a program that runs under MS-DOS.

You may think the C64 is easier to use, but I reckon that's because you're not doing anything complicated – no offence meant. Have you ever tried to create a 200 x 2000 cell spreadsheet on a C64? Run a 20,000 client database? Write a 20,000 word annual report incorporating extracts from the corporate accounts in both numerical and graphic form?

The reason businesses don't use the C64 are pretty obvious: the 40-column screen is hopeless for business, the disk drives are slow and have very limited storage space, and there's very little software available (2,000 variations on the scrolling shoot-em-up make little impression on business buyers).

HELP!
ST quiz

Please could you answer the following questions on the Atari ST:

1. What is involved when fitting a 1Mb RAM upgrade?

2. Do you know how good the Pye 1022 monitor is? Evesham Micros make it sound brilliant, so why is it only £200?

3. With PC-Ditto and a 5.25" disk drive how much PC software would I be able to run? Would there be much loss in speed?

Paul Yates, Exeter, Devon

• 1. You buy the appropriate chips, take off the lid of your ST, and solder the chips (16 of them) into the sockets provided for the purpose. Then you replace the lid and – bingo! – you now have a 1040 ST. Unless you make a mistake, in which case you may have some dead RAM chips or a dead ST.

In practice, unless you're a dab hand with a soldering iron and really know what you're doing, have it done professionally.

2. Suspicious, aren't we? If Evesham Micros say it's pretty good I'd be inclined to believe them, but in any case £200 is a pretty good price but not outrageously cheap for a medium res TV/monitor. If you shop around you can get a variety of colour monitors for only a little more than that.

3. *PC-Ditto* will run a lot of software – generally anything that can be classed as "well behaved". This means most of the big name packages, including word processors, databases, spreadsheets, and so on. Games could well be a problem though, since many games do naughty things with PC hardware which *PC-Ditto* cannot support.

The real catch, though, is speed. As you suspect, PC software will run at speeds between "slow" and "very slow". It's hard to quantify that, but *PC-Ditto* will run much slower than a standard PC and most PC users find that intolerably slow.

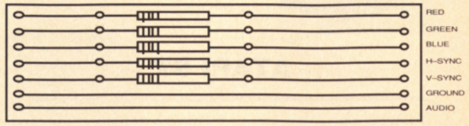
CONNECTIONS

ATARI	MONITOR	
1 SOUND	6	
6 GREEN	3	1.5K RESISTOR
7 RED	7	1.5K RESISTOR
9 H SYNC/SYNC 2	4	1.5K RESISTOR
10 BLUE	5	1.5K RESISTOR
12 V SYNC/SYNC 1	2	
13 GROUND/EARTH	1	

PRINTOUTS from external port view

```
ST SCART SOCKET     FERGUSON RGB

4 . . . . 1          7.      .6
8 . . . . 5        3.          .1
12. . . . 9          5.    .4
     .                  .
     13                 2
```



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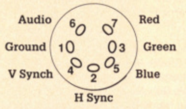
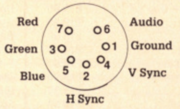


7-PIN DIN PLUG INTERNAL CONNECTIONS



• Please note that connections are reversed in a socket when compared to a plug!

TIP Soldering on

Here's a prizewinning tip for all those DIY-ers who want to run Ferguson MC01/MC05 monitors from their Atari STs:

Parts required:

5 x 1.5K ohm resistors
a small piece of veroboard
an adaptable box 1.5" x 3" x 1"
12" 10-core screened cable
7-pin DIN panel-mounted socket
7-pin DIN plug
soldering tools

Method for use with your own lead (if you have one):

1. Mount 7-pin DIN socket at one end of box

2. Make a hole for the screened cable at opposite end of the box

3. Solder 7-pin DIN plug to one end of the cable

4. Solder the five resistors to the veroboard, ensuring there is a break in the tracks between the ends of the resistors

5. Solder seven small lengths of wire between the DIN socket and the veroboard

6. Push the end of the cable through the hole in the box and solder the other end of the veroboard, ensuring the connections match the pin connections supplied

NB The resistors MUST be in the R, G and B lines, and also in the vert sync and horizontal sync lines (see diagram)

You should now be able to plug in and go.

If you are not the technical type, or are nervous of using a soldering iron, I can make the described adaptor for £8.00 plus 50p p&p.

Unfortunately, I no longer make complete leads, as I cannot get 13-pin DIN plugs anywhere. In fact I have several people waiting patiently (or not) for leads at the moment. If anyone knows where I can get a regular supply of 13-pin DINs I would be very grateful.

C Parker
14 Cross Lanes,
Pill,
Bristol BS20 0JQ

HELP!
Enigmatic code

Am I even more ignorant than I thought (careful how you answer that)? In *Express* issue 6 Peter Worlock says Pascal and C are no good for games, which must be written in machine code for speed, and elsewhere in the same issue Realtime Software say they code their games on PC's and cross-assemble to target machines.

But I've always thought the whole point of a compiled language like C is that it turned the code into binary for you. Are there two levels of machine-code?

And how do Realtime bypass the operating system of another machine, and what do they write directly into?

John Smart, Hitchin, Herts.

• Let's go back to basics. Computers only understand one language – machine code, which is pure binary. So if you want to address the computer in its native tongue, you have to use nothing but binary numbers.

The next step up is assembly language. In assembler, every instruction like LDA or MOV translates directly to one binary number. Obviously, this one-to-one translation makes for highly efficient coding.

Compilers, even though they do convert the high-level source code of C or Pascal into binary, don't have anything like a one-to-one equivalence. A simple PRINT statement in a high-level language has to be translated into several – perhaps dozens – of binary codes. Furthermore, each instruction in machine code or assembler is dedicated to performing one task, but the PRINT statement is a general tool for outputting text to the screen. It should be obvious that a dedicated instruction will be quicker and much more efficient in many cases than a general routine.

So a program written in machine code, or assembler, will almost always be more efficient, and therefore faster, than the equivalent program written in a compiled language like C, Pascal or Modula-2.

As to the way in which cross-assemblers work, there are a couple of approaches and the simplest is merely a case of number manipulation.

As we've seen, a program in assembly language is simply a list of instruction codes and numbers on which they can operate. When this is assembled into pure machine code you're left with nothing but a list of numbers. All the assembler really needs to understand is which codes translate into which numbers for the appropriate microprocessor (6502 instructions are different from those on the Z80, which in turn are different to those on a 68000).

So you can have an assembler producing code for any microprocessor running on any computer.

Now all you need is a way of getting the code from the development machine to the target machine. This can be simply accomplished with an RS232 link and some file transfer software at each end.

Slightly more complex, but much more effective, is a system that not only cross-assembles and produces code for a different target machine but which also allows you to control the target from the development machine.

All that changes is a small control program that resides in both machines. Now the assembled program can be downloaded to the target just as if it had been loaded normally. And it can be run as normal.

However, the control program in the target machine can be activated by the development system to stop execution of the code and show various processor registers, variables and other useful debugging information. The code can also be single-stepped, still under control of the development computer.

The benefit of this approach is speed of program development: the programmer doesn't have to constantly load and re-load the assembler and source code, and the program under development. The assembler and source code are permanently held in the development system while the program is permanently held in the target system, and the programmer can switch from one to the other in a fraction of a second.

Win a sub!

We want to hear your problems, but we also want helpful hints and tips. As well as the eternal glory of helping out your fellow sufferers, you could even scoop the weekly best-tip prize of a free 26-issue subscription to this magazine!

And remember, there's no waiting around for monthly publication dates. The best tips, and solutions to your problems will be in print before you can say Alan Sugar (please don't send SAEs for replies, we can only answer enquiries in print).

So whether it's help offered or needed, write to:

Tech Tips, New Computer Express,
4 Queen Street,

HELP! Christmas turkey

For Christmas we received an Amstrad CPC6128. We are beginners and have followed the manual very carefully and for the first few days our computer was working fine.

But one day we loaded the disk and the screen came up with "Failed to load in boot sector" and we have not been able to get the computer to accept any disks since.

We've looked carefully through the manual and tried various things. We took the disks to a friend's CPC 6128 and our disks worked fine there. Our computer is working OK otherwise.

Is it something we've done, and if so, can we put it right? Please help.

Jamie (11yrs) and Simon (9yrs) Pattison, Doncaster

• What a disappointment! At least it worked for you on Christmas Day.

You've almost certainly got a dodgy disk drive, since you've eliminated all other possible causes. If your disks are OK (and they are), and if the computer is OK (and it is), then the drive is all that's left.

Fortunately, you don't have to worry about putting it right. Your machine is under warranty, so get your Mum or Dad to take it back to the shop it was bought from. Don't accept the offer of a repair – insist on a new computer, which is what you're entitled to.

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PURPLE SATURN DAY	49.90	22.46	54.90	22.42	54.94	23.46	44.94	22.46
ROBOCOP	49.90	23.46	54.90	23.42	54.94	24.46	44.94	23.46
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All offers subject to availability. Look out for Myth, only from Official Secrets

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BATMAN	44.90	20.96	44.94	18.96	39.94	19.96	39.94	20.96
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DUNGEON MASTER	49.94	22.48	49.98	20.48	44.98	21.48	44.98	22.48
ELITE	49.90	22.46	49.94	20.46	44.94	21.46	44.94	22.46
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JOAN OF ARC	44.94	21.98	44.98	19.98	39.98	20.98	39.98	21.98
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POWERDROME	49.90	24.96	49.94	22.96	44.94	23.96	44.94	24.96
PURPLE SATURN DAY	49.90	22.46	49.94	20.46	44.94	21.46	44.94	22.46
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For larger programs and for those with strong editor preferences we also supply an editor-less compiler for traditional disk-to-disk compilation methods.

ABS AND APPEND AREA AREAFILL AS ASC ATN
BAR BASE BEEP BIN$ BLOAD BREAK BSAVE CALL
CALLS CASE CDBL CHAIN CHDIR CHR$ CINT CIRCLE
CLEAR CLNG CLOSE CLS COLLISION COLOR COMMAND$
COMMON CONST COS CSNG CSRLIN CVD CVI CVL
CVS CVSIEEE DATA DATE$ DECLARE DECR DEF DEFDBL
DEFINT DEFLNG DEFSNG DEFSTR DIM DO ELLIPSE ELSE
ELSEIF END EOF EQV ERASE ERL ERR ERROR
EXIT EXP FEXISTS FIELD FILES FIX FOR FRE
FUNCTION GET GOSUB GOTO HEX$ IF IMP INCR
INKEY$ INPUT INPUT$ INSTR INT KILL LBOUND LCASE$
LEFT$ LEN LET LIBRARY LINE LOC LOCAL LOCATE
LOF LOG LOG10 LOG2 LOOP LPOS LPRINT LSET
MENU MID$ MKD$ MKDIR MKI$ MKIEEE$ MKL$ MKS$
MOD MOUSE NAME NEXT NOT OBJECT.xx OCT$ OFF
ON OPEN OPTION OR OUTPUT PAINT PALETTE PATTERN
PCIRCLE PEEK PEEKB PEEKL PEEKW PELLIPSE POINT POKE
POKEB POKEL POKEW POS PRESET PRINT PSET PTAB
PUT RANDOM RANDOMIZE READ REDIM REM REMAINDER
REPEAT RESET RESTORE RESUME RETURN RIGHT$ RMDIR RND
RSET RUN SADD SAY SCREEN SCROLL SELECT SGN
SHARED SIN SLEEP SOUND SPACE$ SPC SQR STATIC
STEP STICK STOP STR$ STRIG STRING$ SUB SWAP
SYSTAB SYSTEM TAB TAN THEN TIME$ TIMER TO
TRANSLATE$ TROFF TRON UBOUND UCASE$ UNTIL USING
VAL VARPTR VARPTRS WAIT WAVE WEND WHILE WIDTH
WINDOW WRITE XOR

HiSoft BASIC - Reserved Words

HiSoft BASIC is a no-limits language; string variables may be up to 16Mbytes in length and there are no limits on array sizes either (subject to available memory). Code generated is fully 68010/020/030 compatible.

Compiled programs have no run-time overhead; all compiled programs share an Amiga library. which may be distributed with programs without charge. Compiled programs multi-task, of course, and as they all share the same library, memory usage and disk space is kept to a minimum. There is also an option to produce completely stand-alone programs which include only as much of the library as they need.

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- ✓ no limits; no program size limit and no variable size limits,
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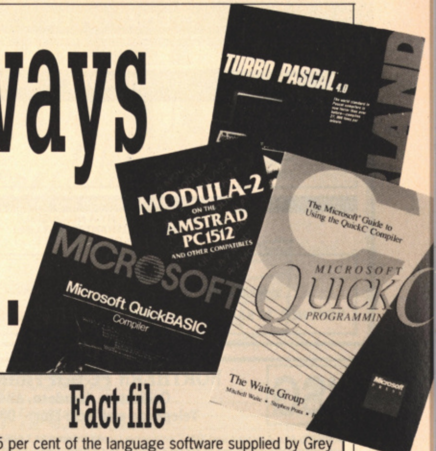
10 things you always wanted to know...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....about programming languages and tools

Simon Williams visits a team of expert computer linguists. His report now, from deepest, darkest Devon...

When you get your teeth into a new game or run up an application for the first time, do you ever spare a thought for the programmer, and wonder how he set about writing it?

Programming languages are getting very sophisticated these days, with innumerable libraries of pre-written routines and extras which make life easier. The programming scene in the UK is thriving and one of the biggest importers of langauges and programming tools in the country is Grey Matter, set just off Dartmoor in South Devon. There, a stalwart 20-strong language support team has a good few ideas on the state-of-play of programming.

The support team, most of whom are programmers in their own right, spend their days answering calls from customers who have bought language software or are thinking of doing so and have a particular problem to solve. Although each member of the team has particular specialisms, most have a wide knowledge of different packages. Phones rule, and take precedence over non-phone activities!

Grey Matter – now and then

Grey Matter started in 1980, when brothers-in-law Iain Rangeley and John Cross set up a consultancy and software import business behind the maxim 'do things right by the customer'. Thus they concentrated from the outset on providing strong after-sales support for any product bought from them. They deliberately went for the programming market, as British programmers were then very underserved in comparison with their American counterparts.

The business has grown and prospered, but the emphasis has remained on customer support. Grey Matter employs no salespeople, but relies instead on word of mouth from satisfied customers and on some advertising.

Grey Matter's elongated barn of a building looks and feels like a cross between a university library and the 'electronic office' so often talked of but yet to be seen in the plastic. The pervading interest with programming languages stretches right down to the two cats which patrol the premises. Ada, who will take a swipe at you any time, and Smalltalk, who is very user-friendly, are not the only ones with open windows and mice on their minds.

One of the most exciting developments, still in the early stages of planning, is a distributed information system which Iain and John intend to put together in the next few years. This will provide every member of the support team with a PC on an ultra-fast network (the software is being custom-written in-house to cope with the huge flow of data and the number of file servers on the network – potentially every station). The intention is to scan documents relevant to every piece of software stocked, and to hold them in compressed *graphics* files. All the information currently held in hundreds of loose-leaf binders will then be available to anybody offering support over the phone.

The information held in this way is likely to run to tens or even hundreds of Gigabytes – well above the capacity of most current mainframes, and only really feasible on a distributed system.

Phone lines

Nearly everyone at Grey Matter has some quirky enquiry to relate. For example the person who rang to complain that his language software didn't run properly. It turned out he was running his PC in sub-zero conditions in a barn on a Dartmoor farm, and his machine was suffering from condensation. This only became apparent because the caller's teeth were chattering!

There was also a call from a salesman in a certain high street multiple who had been supplied with software on the wrong format of disk. When told that the disk he needed was of a different format, he came back with "What does the format matter?" ●

Fact file

1. Over 95 per cent of the language software supplied by Grey Matter is PC-specific. This is partly because of the huge number of PCs in use, but also because of the very wide range of programming tools available in this computer format.
2. Over 50 per cent of the language software relates to the C programming language. Most of the rest is devoted to BASIC (QuickBASIC being the most popular), Modula 2 and Pascal.
3. C is the most popular language taught in US colleges, while Modula 2 enjoys a similar status over here. The large number of Unix installations in America accounts for the US choice, whereas the increased structure of Modula, and the fact that it's a European language, makes it the UK favourite.
4. The favourite version of C among the support team is not Borland, Microsoft or Zortech, but Watcom, which is faster and more compact than any other. There aren't at present as many pre-written libraries available for it, though.
5. Most useful language compilers don't adhere to any standard version of the language. Most of the best ones include 'switches' to cut out the extra features, though. This way you can check how close to the standard your program comes, and how easy it will be to transport to other versions of the language.
6. As Microsoft's new operating system, OS/2, becomes more popular, there may be a swing towards Modula 2 as a preferred programming language. This is because Modula 2 includes code to handle multi-tasking (running more than one program at once).
7. The latest version of the C language, known as C++, is highly regarded. It is available in the well-known version from Zortech, and a new one from a company called Glockenspiel!
8. The buzz-word language products of 1988, 4GLs (Fourth Generation Languages) have proved too bulky and slow for general use. Many people are now returning to conventional languages like C, Pascal and Modula 2.
9. Program Generators, on the other hand, are becoming increasingly popular, and several now produce code in any of several computer languages.
10. The most common reason for customers phoning Grey Matter for technical support is that they haven't read the manual thoroughly!

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PD Good

A few years ago 'Public Domain' were two dirty words to me. I'd sent for some stuff and been distinctly underwhelmed by it. I mean, a text-only golf simulation?? So it was very hesitantly that I risked a few pounds in order to try some PD programs for the ST. Maybe they'd improved a bit, alongside the improving machines. Improved a bit? Good grief, some of the stuff that came back could have been on sale for £14.95 and still been underpriced.

Gone are the days when you bought your computer and then had to save up for another month before you could afford your first piece of software. The high standard and wide availability of ST PD programs mean that for less than a tenner anyone can have the basis of an excellent software library.

If you've just got your machine and haven't yet tried the PD libraries, look through the small ads and try them at once! The general cost is about £2-3 per disk, and I know some poor fools who pay more than that for blank discs. If you provide your own disk to some of the libraries then the cost comes down to about £1-2 per disk.

So what can you get? On the word-processing side you can choose between *First Word* and *STWriter*. The former may not be quite up to the standard of the commercially available *First Word Plus*, but if anyone wants to complain about a program that costs them a quid, then kindly don't bend my ear-hole about it. Pay another pound and you can add a spelling checker, word counter, ASCII file convertor and a few other goodies.

You won't realise what a joy it is to have a program as good as *First Word* available in the public domain unless you've been used to shelling out £70 or even £270 for 'professional' programs on other Personal Computers (no names mentioned).

If pictures speak louder than words as far as you're concerned, then there's an even wider choice. Careful, though, or you could end up spending as much as...ooh, easily a fiver. *Neochrome* usually comes bundled with the machine, but there are other art packages like *ArtiST* (for mono users, and is *Degas*-compatible), *Picworks*, *Masterpaint* and *Palette Master*. Or if *Degas* isn't your favourite painter, how about *Van Gogh*? There are so many different graphics formats on the ST, something rightly bemoaned by Richard Monteiro last month, that anyone is likely to find the various art conversion programs useful.

Serious utilities abound, and I regularly use several from both PD sources and the *ST/Amiga Format* cover disks: mono emulator, fast formatters, undelete programs, copydisc programs and one of my favourites, which creates a 200K RAM disk as Drive D when you boot-up. Believe me, if you can't afford £90 for a second external drive, this is almost as good – and about £88.50 cheaper!

Jack Schofield edits the computer pages of *The Guardian*, and is one of the ST's greatest supporters to boot – not that I would, of course. He's so impressed with PD software that he's put his own disk together especially for contributors to *The Guardian*. It contains programs like *Speedmouse*, *TurboDOS*, *Sheet15* (a GEM spreadsheet not totally unlike *Lotus 1-2-3*) and *Uniterm*, a very good comms program. And you don't have to be a *Guardian* contributor to put your own disk together from PD sources. So for less than £10 you can be using a spreadsheet, word processor, art utility, database, RAM disc and comms program!

There are games galore as well, of course. They range from the sublime to the ridiculous, and as soon as my copy of *Strip Breakout* turns up in the post I'll let you know which of those two applies to this one. There are versions of most programming languages available in the public domain too, so send for the catalogues and it really could be a case of C for yourself.

Mike Gerrard

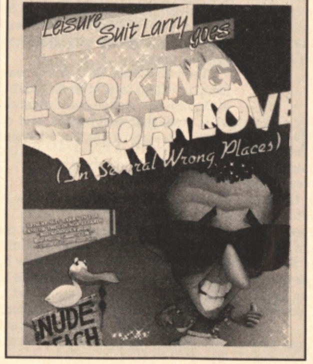
Disk-counting

Do you remember those innocent days when a program had to fit into 16K, was only available on tape, and any listing over a page long in a magazine was a mega-game? I ask because I've just got a copy of Manhunter from Sierra, or Activision, or Mediagenic. Someone, anyway. Reading the manual gave me a headache, and as for trying to understand the gameplay...

It comes on five disks...yes, five, and because I was getting nowhere in the game I amused myself by totting up the amount of code. It amounts to – hold your breath – 1,621K of program. And about 1,620K of those seem devoted to ways of killing me.

Then samples of two more Sierra games arrived, which should be coming to an ST near you, and hopefully me, in the spring. King's Quest IV: The Perils of Rosella in its PC version fills up no less than nine 5.25" discs, or four 3.5" ones, and lucky PC users get both in the package. Remember back, again, to the days when the disk version of a game usually cost about £5 more than the tape version -- and software houses could never really explain why this was? There are 13 disks in that little package, so how come it doesn't cost at least £65?

There are a mere nine disks in another Sierra offering, Leisure Suit Larry Goes Looking for Love. I wouldn't mind, but I don't even have a PC. Very frustrating, especially when the original Leisure Suit Larry in the Land of the Lounge Lizards was one of my favourite ST adventures of last year. The follow-up features a...well, a feature that I can't wait to try. Not a Difficulty Level, oh no. This one features a Filth Level! Set it to just the right amount of filth that you think you can take. And good luck when Larry goes looking for love down on the nude beach. Disk-usting!



PC UPDATE

McKraken wakes

What do you think of as an adventure? For a PC user it's probably the best InfoCom can produce. Witty text, devilishly cunning plots and judicious use of the Save Game function to progress past the first couple of locations.

What about graphics adventures? Same thing, only with a few pictures of the more interesting places. The latest adventure offering from the games wing of LucasFilms could be the start of a rather different genre, though.

Zak McKracken and the Alien Mindbenders is a graphic adventure with a difference. In this one you play out each command in full animated action. Zak is ace reporter on *The National Inquisitor* (a sort of up-beat *Sunday Sport*) and stumbles on a bizarre attempt by aliens from Mars to take over the world and make everyone stupid (sounds like the *Sunday Sport* again). With your guidance, which can be from the keyboard or with a mouse, Zak can gather together his credit card, telephone bill and goldfish. He can make the necessary reservations and assuming he can persuade the bus driver to open the door and let him on board, he can potter off to the airport and wing his way to a number of exotic locations.

FASTOPEN revisited

You may remember a couple of weeks ago I mentioned a little known MS-DOS command called FASTOPEN and asked if anyone knew what it actually did. Well, Robert Waller of south-east London does. He read it MS-DOS A Quick Reference Guide, published by Abacus Software. The syntax for the command is:

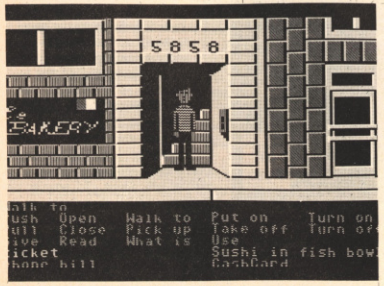
```
FASTOPEN <drive>:[number]
```

`<drive>` ***the drive which FASTOPEN is to operate***

`[number]` ***the number of directories to be held for fast access. It defaults to 34 if no parameter is given***

Every time you access DOS to search for a file, the operating system has to look through all the directory trees on your disk, which can take some while on a large hard disk. FASTOPEN stores the complete access path for [number] of your most recently used files. If you refer to a file whose path is currently being held, it will be found and accessed much faster than by hunting through the hard disk.

FASTOPEN takes 35 bytes for each file whose path is stored. The list is maintained on a First In, First Out (FIFO) principle so if you store details of more than [number] files details are lost from the bottom of the list.


5858
BAKERY
Walk to
Push Open Walk to Put on Turn on
Pull Close Pick up Take off Turn off
Give Read What is Use
ticket Sushi in fish bowl
phone bill CashCard

All this can be seen in real time in the best that EGA, CGA or Hercules can produce. All the characters, through rather basic graphics, move around the scene and interact, rather than just being decorative pictures. There's plenty of extra material for you to ponder over as well. A gratis copy of *The National Inquisitor*, an Exit Visa Security Card (otherwise known as an anti-piracy device) and a Groucho Marx lookalike kit with real hair eyebrows! Wow!

It's actually well worth a second look and has become the firm favourite of a friend's nine year-old daughter. Like the films, this George Lucas credited game can be recommended for all the family.

Optical Illusion

With the steady increase in graphics applications on the PC, there's one increasing problem for the computer artist – how to transfer graphics files from one program to another. It's often the case that graphics created in one package are better captioned in another and incorporated into a page in a third. With no single standard for graphics on the PC, this has been quite a headache.

It could be all over, though, if a package called *Optiks*, which I've still to get hold of, proves as good as its spec suggests. *Optiks* specialises in converting graphics files from one format to another. Several hundred formats are supported, including all those used by common PC graphics packages, as well as standards used by ST and Amiga computers.

As well as converting between formats, *Optiks* allows you to tidy up graphics files (particularly useful if you've scanned the image in) and manipulate them before saving in any of its many file types.

Best news of all, perhaps, is that the program is shareware, so you can try it out before you buy. More details and the product itself should be available from the Ctrl Alt Deli on 0908 662759 by the time you read this.

Come the revolution

Talking of shareware, the marketing system by which you can try software before you buy, and pass it on to your friends without compunction, I've just had a new catalogue from Shareware Marketing, probably the biggest supplier of Shareware in the country. Their catalogue now runs to lots of pages (enough to come perfect bound) and is heavily illustrated with screen dumps of their products. There's also a very infromative piece by Jim Button, one of the American pioneers of shareware, detailing why he thinks the technique has proved such a success. There's a bit of hype in there but there are some interesting bits as well – like the fact that there are now four shareware companies in the US with sales of over one million dollars.

SM's range is wide; everything from pukka graphics programs to arcade games to a complete version of the King James Bible. All available for assessment for a few quid. And if that doesn't get me a free drink next time I meet Steve Lee (SM's boss), there's no justice in the world.

Simon Williams

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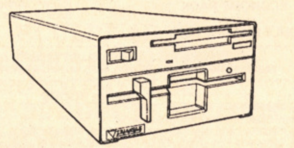

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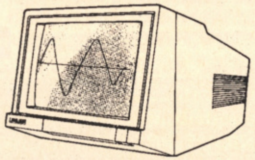

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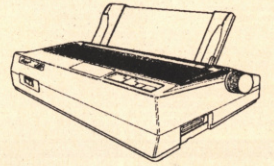

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AMIGA BLIT

Amazing Discovery

Things certainly seem to be picking up on the Amiga games scene. While companies such as US Gold still continue to push lacklustre games ported over from the Atari, several very exciting titles are keeping tired computer journalists such as myself awake during these cold January nights.

It really is quite embarrasing at times to compare some of the absolute trash pushed out onto the market by UK software houses with some of the software that is arriving from both the continent and the States. As always, there are exceptions, such as Grandslam's *PacMania* and Jez San's cult classic, *StarGlider II*, but decent home-grown Amiga products are few and far between.

My vote for Amiga software house of the month must undoubtedly go to the American company Discovery Software. Discovery, formerly better known for its disk copiers than games software, has in recent months published some very hot titles indeed.

Top of the bunch is surely the excellent *Sword of Sodan*, a game I have been playing for a couple of weeks now. I can safely say that I'm hooked. In terms of audio visuals, there is absolutely nothing to touch it. Sodan, the programmer, is probably better known to Amiga enthusiasts as the co-author of the excellent *Tech-Tech* demo. If you haven't seen it then beg, borrow of steal a copy, *Tech-Tech* is one of THE premier demos on the Amiga.

Second on my list of 'must haves' is another title from the Discovery Stable, *Hybris*. If like me you love nothing more wasting aliens, then *Hybris* will appeal to you. With its pure arcade action and superlative audio viduals, *Hybris* is one of the best shoot-em-ups on the Amiga, and as anyone who knows me will confirm, praise such as this is very rare indeed. Still, for the definitive review, check out *Express* next week...

• Hybris: Greatest ever Amiga shoot-em-up?

Last, but definitely not least, is *Dragon's Lair*. Not from Discovery this time, but fellow American software house, *ReadySoft*. I've finally been able to get my hands on a review copy and have been playing it ever since (between sessions of *Sword of Sodan* and *Hybris* that is!). Want to impress someone with your Amiga? easy, just load *Dragon's Lair* and you'll blow them away. Makes me feel sad for all those misguided soles who bought Ataris.....

GFA vs HiSoft

Yes, it was inevitable. The battle of the BASICs has started. Which is best? HiSoft or GFA BASIC? Listening to the various claims coming from the two software houses concerned could leave you in bit of a muddle. However, I've been able to tinker around with both for a couple of weeks now and these are my initial impressions.

GFA BASIC is undoubtedly a more sophisticated and powerful implementation than HiSof't's offering, but it gains this by sacrificing compatibility with AmigaBASIC. HiSoft BASIC, on the other hand, is highly compatible with AmigaBASIC but still manages to sport some impressive enhancements.

In my opinion, going it alone by dropping AmigaBASIC compatibility will probably turn out to be a grave mistake on the part of the GFA designers.

GFA BASIC offers some wonderful features, such as a built in file requester that can be called from a single BASIC command, FILEREQUEST. Unfortunately, GFA does suffer from some major bugs. I was actually able to crash the language every time when using the ALERT statement.

The greatest asset offered by HiSoft BASIC is undoubtedly the inclusion of a compiler. No compiler for the current version 3 of GFA BASIC yet exists, even on the Atari, so be prepared to wait a fair amount of time for an Amiga version to arrive.

Choosing between the two really comes down to a matter of personal taste. A bug-free GFA BASIC complete with compiler would be the ideal choice but until that arrives, HiSoft BASIC is the one to go for.

Doctoring your Disks

How many times have you been carrying out a disk-intensive task on the *Workbench* when all of a sudden a requester pops up informing you that the Amiga was unable to validate your disk and it is now corrupt?

And then, to seemingly rub salt into your wounds, the Amiga then suggests you run the *DiskDoctor* program on the disk. What *DiskDoctor*? What is the machine talking about, you may well ask? Read on, as all can now be revealed....

DiskDoctor is another one of those hidden gems (or should that be Intuitions – sorry, bad joke) that Commodore forgot to tell you about. Try as you might, you won't find an icon for it anywhere. *DiskDoctor* is actually a CLI command hidden away with all the other little CLI commands in a rather obscure directory on your *Workbench* disk. The only way to access this mavellous program is through the CLI. Don't panic, though! This won't hurt a bit.

The first thing to do is to drop down into the CLI. You can do this by double clicking on the CLI icon found inside the System drawer on your *Workbench* disk. After a few moments disk access, a CLI window will appear. To actually run *DiskDoctor*, type in the following at the prompt:

```
DISKDOCTOR DF0: <Press RETURN>
```

Once the *DiskDoctor* has been loaded, you will be prompted to insert the corrupt disk into your internal drive and then press the RETURN key. Don't use this command on a disk unless you really have to, though, as strange things have been known to happen.

Jason Holborn

SPEX

Broadening horizons

Isn't it about time software houses started writing some titles specifically for 128K Spectrums? The Speccy has had increased memory for a long time now, but how many pieces of software have used it to anything like full capacity?

WHERE TIME STOOD STILL
SPECTRUM 128
ocean

I can think of only one title; Ocean's *Where Time Stood Still*. It was well-liked by public and press alike, but surprisingly didn't persuade anybody else to write a 128-specific title. Most software companies have acknowledged the +2/+3 pretty half-heartedly with enhanced music or elimination of multi-load.

I reckon we deserve better; a 128K version on the flip side of the standard game at the very least. When you consider how much people like Incentive have managed to squeeze into 48K, imagining the results they could achieve if they used the beefier Spectrum as their target machine is enough to make you drool with anticipation.

Priceless antique

Sorry to rave about another budget re-release this week, but I'd never forgive myself if you missed some of the classics currently abounding in the re-run market. Zeppelin's *Battle Tank Simulator* might be the 128th budget game to have 'simulator' in its title, but don't be put off, because behind the Code Masteresque name hides a definite golden oldie if ever I saw one.

It's none other than *Tank Duel*, an ancient rip-off of *Battlezone*, that old vector graphics arcade machine with the periscope thingy to look through.

A well-executed period piece, it still plays excellently and was Realtime Software's first ever release (they moved on to do *Starglider*, *Carrier Command* etc.). Now there's a fact to impress your friends with.

Strategic advance

Next time all you arcadesters are tucking into the latest alien blasting orgy, spare a thought for the poor, neglected strategy fan weeping in the corner because he has nothing to play.

Fear not, my special little strategy contingent, somebody likes you – Electronic Arts, to be precise.

Its duet of two very strategic games, *Archon* and its brother *Adept*, collectively known as *The Archon Collection*, has just made it onto the Spectrum.

Rik Haynes gave the Amiga version four stars in issue 9, and despite the fact he's a bit of a Commodorist, I'm inclined to agree with him. The Spectrum graphics are very unimpressive – pre-1985, in fact – and sound is virtually non-existent. Still, in this type of thing it's the gameplay which should dominate, and on the Spectrum version it most certainly does.

I can't promise you that it's 100 per cent free from arcade additives, but you'd have to be a demanding sort not to enjoy it.

Outlet outlet

Aarrgh! A small bug managed to creep into issue 9's column. When reviewing *Outlet* magazine, for some unknown reason I said the free sampler Chezron Software kindly supplied to all enquirers 'isn't actually available at the time of writing, though' (not one of my better sentences, as you can see). What my weary fingers should have bashed in was something which would have indicated the sampler is not available on *tape* at the moment. Any Plus D, Opus, Disciple or Microdrive owners who send a blank disk/cartridge will receive the sampler (Tape-based people can get a proper issue of *Outlet* for £2.75). Chezron Software can be found at **605 Loughborough Road, Birstall, Leicester LE4 4NJ**. Hope that clears it up.

Archon tips

- Cast an imprisonment spell on the opposition's strongest icon and then shift time to prolong the entrapment
- If you like living on the edge, teleport your strongest icon to the heart of the enemy side and attack anything in your way. Unsubtle, but effective
- Try to fight icons of about the same power. Picking on the weaker character might seem effective, but more than likely it'll sap energy much needed for the really strong villains
- Only revive your powerful icons and don't heal a shapeshifter; after battle they regenerate
- In combat, keep moving and hide behind obstacles when you need to re-arm

Serious gap

In the festively extended Christmas Spex, you may remember a letter asking for more space to be devoted to serious Spectrum applications instead of banter on these frivolous games.

I said my humblest apologies and agreed a bit more talk concerning such matters would most definitely appear in future columns, Scout's Honour and all the rest of it.

Well a few columns have passed and still not much serious scribbling has appeared. Were these politician pre-election type promises? Well, no, the main thing preventing coverage as detailed above is the simple fact that no so-called serious applications or hardware has come anywhere near me. And who can blame it?

If any software houses which markets utilities or hardware is reading this, I beg you on bended knee to get in contact. Surely you're not allergic to free publicity?

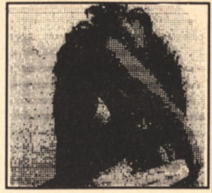
If I've stirred you into action, write to me at the address at the bottom of this column.

Write away!

Mail levels are still at an all-time low. I'd really like to hear from anyone who has got something to say about the Speccy, as well as those with gaming or programming tips. I can't promise any financial reward, but surely the honour of appearing in such a prestigious place is more than enough for you?

Send everything to me at **SPEX, New Computer Express, Future Publishing Ltd, 4 Queen Street, Bath BA1 1EJ**.

Robin Alway



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SECTOR 64 SECTOR

Great machine! No software

The CBM 128 seems to have been forgotten today, though we hoped it would be a success when it first appeared on the British market in 1985 (we were among those who bought one). The problem was, the new machine had a built-in '64' mode, which meant there was little incentive for software houses to cater for it separately.

The great advantages of the 128 included its nice Basic and sprite editor, not forgetting its high quality machine language monitor, which 'Our Mic' uses for writing his 64 games, instead of maybe a PDS or an Assembler. A disadvantage with its size of memory was the major bank switching needed.

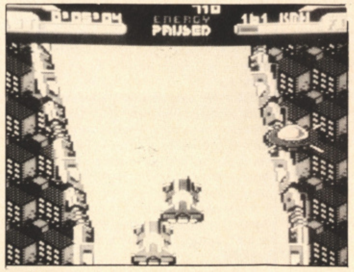
The CBM 128 has a co-processor, a Z80, with a 2Mhz clock rate, which runs faster than the 64's standard processor, the 6510. There is a bug in the machine's 64 mode in location #53296 which if set to a wrong value will muck up the display and double the speed in 64 mode. This is why many games such as *He-Man* and *Yabba Dabba Doo* didn't work, but this was actually used to advantage in *Alleycat*, by Andrew Braybrook.

Another great thing about the 128 is that you can program in Z80 as well as 6502/6510, making it more flexible.

On their way

There's a nice, lengthy list of software coming from US Gold:

LED Storm • £9.99cs, £14.99dk (any day now)



• LED Storm

Last Duel • £9.99cs, £14.99dk (any day now)

This game takes you through 6 levels of arcade action in a bid to rescue a princess.

The Deep • £9.99cs, £14.99dk (any day now)

Human Killing Machine • £9.99cs, £14.99dk (February)

This game has similarities to *Street Fighter*. It has you travelling through five different countries and taking on ten different opponents.

You start off in Moscow as a Russian soldier called Igor with his companion Shepski. You then go to Amsterdam as Maria with your partner Helga (who will punch up anyone at the nightclub). Next is Barcelona, as Miguel and his bull Brutos. From there you go to Germany as Hans and waiter France. Finally, you end up in dreaded Beirut as Sagan, accompanied by friend Merkaca.

Zak McKraken • £9.99cs, £14.99dk (February)

Vigilantes • £9.99cs, £14.99dk (March)

Another *Street Fighter*-type game.

Out Run Europa • £9.99cs, £14.99dk (April)

The follow-up to *Out Run*, the Sega game that sold over 300,000 units.

Battle Hawks • £9.99cs, £14.99dk (April)

Forgotten Worlds • £9.99cs, £14.99dk (May)

Strider • £9.99cs, £14.99dk (July)

Indiana Jones; The Last Crusade • £9.99cs, £14.99dk (Aug/Sept)

C64 demo writers

It was interesting to see a letter in another weekly mag from a reader talking about hackers and crackers – and quoting "ASH&DAVE" and "IAN&MIC" as examples.

Unfortunately, clean demo writers (enthusiasts) are mistakenly confused with crackers, and we can assure all our readers that neither we nor "ASH&DAVE" have ever had need to do this.

A cracker is a person who buys a game then cracks it by putting in all the latest cheats and then writing an intro, which is similar to a demo, for the start of the game. They will then swap their new crack all over Europe for another program in return.

People tend to think that if you write demos you must be a part of all this. Yet most demo writers, like the ones on Compunet and ourselves, write demos purely for pleasure. Also, writing demos is a good, fast way of showing your programming powers: for example, you might write a demo showing exactly how many sprites you can have on the screen while maintaining full screen colour and memory scroll. This sort of thing gives software companies a good idea of your talents and ability.

It is quite wrong tosay that if you write demos you must be a cracker.

Hardware

Southampton-based Megaland has two printers on offer. The LC10 Commodore printer is £159.95 and a colour version of the same printer £199. Contact Megaland on 0703 330544, or write to **Megaland, 42-44 Millbrook Road East, Southampton**.

Also, before we forget, Megaland has the new 1581 Commodore disk drive. As we reported previously, the new drive uses the same disks as the Amiga/ST. This means 1Mb (1,024K, for those who don't know) of memory instead of the 166K on the 5.25" 1514 drive. The new drive costs £115.

Cheats

Thanks again to Robert Troughton for these cheats.

The first is for that colourful Gremlin game *Mask II*. On the title page select code entry and type "MAYHEM", then move into the teleport to enter the next level. Also, you can type "PETALS OF DOOM" to be invisible, and if you type "TRANSMOGRIFY" you can move into the teleport and go to the moon.

Robert's second cheat is for the Mastertronic game *Rogue*.

```
POKE 27190,234
POKE 27191,234
POKE 27192,234
SYS 26667
```

This will give you unlimited strength.

Ian + Mic

CPC centre

Bush fire

Afterburner (stunningly good for an arcade conversion, I reckon) has arrived – and it would take a better man than I am to abstain from just a wee bit of gloating that it coincides with real life activity involving F14s in the Med.

And while we're on about magnificent men and their flying machines, Microprose has finally finished *Airborne Ranger*, which is nice (finishing it, I mean). For a game that occupies both sides of a disk or a couple of tapes, you'd have thought it would take weeks to master. But no! Completion of the various missions is surprisingly easy – and I speak as one who has trouble getting airborne at all with most of Microprose's hefty flying sims.

It is a pity the thing looks so naff, though. *Pirates*, an earlier Microprose release, used loads of bright blocky graphics ported over from another computer. *Airborne Ranger*, by contrast (pun intended), is rather plain (also intended). This habit of using just a few colours is difficult to comprehend, when – as you well know – the CPC has the best colour-to-resolution ratio of any 8-bit home micro.

Still, with each of the 12 missions subtly different, set in different terrain, and with different objectives and tactics, *Airborne Ranger* has given me the best late nights on my CPC I've had since *Total Eclipse*. The Microprose label is as ever a guarantee of quality – and it's not often you can say that of CPC games! (Two other examples: Electronic Arts and Incentive.)

LORD OF THE RINGS
GAME ONE

• Hobbit-forming Lord of the Rings gets another licence to thrill

So long as you've got your elf...

J.R.R. Tolkien heads for another appearance on the CPC, courtesy of Melbourne House's fantasy wargame *War in Middle Earth*. It follows three famous adventures: *The Hobbit* (more bugs than the Natural History museum), *Lord of the Rings* and *Shadows of Mordor*. Opinions were divided, but they sold well – probably, it's fair to say, in large measure due to the fame of the books on which they're based.

Anyway, *War in Middle Earth* covers the events of Frodo's quest to destroy the One Ring and the attempts of the Fellowship to raise the races of Middle Earth against the forces of Sauron, Dark Lord of Mordor. If you want the world to remain a nice place where hobbits can wander around in safety then you'd better start practicing your Nazgul dodging and orc bashing.

Bard mania

Wearing my *Amstrad Action* hat (well, T-shirt actually), I must say I've never seen anything quite like it. We're used to receiving lots of games maps, pokes and hints, but surely no game has prompted so many and such detailed letters as we have had for Electronic Arts' brilliant *Bard's Tale*. Whether it's because the game lends itself especially well to map-making and so on, or whether something about the game inspires addiction (certainly true of your correspondent) I don't know. Anyway here's a few hints.

All Greek to him

George Kassimatis, an enterprising Athens-based pal (ooh, we're so cosmopolitan in the CPC corner), has succeeded in connecting a video to his CPC colour monitor. Problem is, the screen's black and white only! He took the composite video and fed it into all of the Amstrad monitor connections except earth, which is connected to the ground of the composite signal. Anyone out there help in producing a full colour picture? Send info to: George's Problem, CPC/NCE, 4 Queen St, Bath, BA1 1EJ. Crisp (salt 'n' vinegar flavour) tenner for a workable solution.

Devising your party

- It's generally agreed that the right balance is vital: too many fighters and you're at risk from magical creatures; too many magic types and you won't live long!
- When rolling for character attributes, always try hard to give all characters a high constitution, so they gain bonus hit points when they increase levels. Other attributes will increase in time, but if you start with low bonus hit points you're stuck with them. 17 or 18 is excellent (impossible for magic users I know, but go as high as you can).
- Add up the attributes and aim for 62 or more: 66++ is excellent; 58 — and you're in trouble.

One or two ideas for getting going

- Start cautiously. Stay near the Temples of Healing at the centre. Walk around only in daytime (go into the Adventurer's Guild if necessary).
- Equip characters with the best gear you can afford – fighters especially. Kick doors to select your opponents, and only attack weak things (Cowardly? Sure, but safe too!).
- If you're killed, don't bother with revival, unless the fee is very low or you're particularly rich. Simply load back the latest saved party...
- Which leads us to the most obvious but also the most important tip of all: save regularly!

What immortal aardvark can shame thy fearful symmetry?

Tyger Tyger, Firebird's upcoming release, has you playing a Sumo-style character called Lance Tyger and travelling about a mystical land looking for aardvarks and other monstrous beasts to slaughter (A word of advice: always suspect anything, be it game or magazine, that features aardvarks). You start off with only a sword to keep said monsters at bay, but other more powerful weapons can be purchased from the gold that you just happen to find lying around on the floor. Will you get to a final confrontation or just end up being squashed by an angry aardvark? You'll have to try it and see.

Steve Carey

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PCW PATCH

You'll Pisces yourself

It was heartwarming to look at the Forthcoming Releases section in this week's issue. The clanky old Amstrad PCW had as many new pieces of software on imminent release as the hi-tech Archimedes and the Apple Macintosh. Who says the PCW software market is dying? Here's our 8-bit Amstrad doing just as well as its 16 and 32-bit contemporaries!

In memoriam

If you want to print a document in LocoScript and work on another one while it's printing, try copying the document to the machine's M drive and printing it from there. Things will work very much faster – and you can even work on the disc version of the document being printing.

OK, so there was only in fact one piece of software scheduled for release – the Magnetic Scrolls game *FISH*. Described as a 'wacky adventure', it features such humorously titled characters as 'The Seven Deadly Fins'. Most amusing.

Thesis your life

Protext really is the most underrated program for the PCW. Most people dismiss it as a word processor-with-a-word count, a faster rival to *LocoScript* which isn't so good at laying out text on the page. (*Protext* users will know to their cost how you can't mix different size letters in the same line or even document without hassle.) A certain member of the team responsible for *LocoScript* described *Protext* as a 'text editor with a format command tacked on the end').

Protext, though, isn't just a very fast text processor. It is really a word processing programming language and can be used as a powerful free text database – ideal for writers, journalists, authors and academics.

For instance, you can work on two files at once, letting you keep your file full of notes in the 'background' and work on your main document at the same time. Then you can swop to the notes, find a useful block of text, copy it to the main document, and continue – all in seconds.

You can also write series of commands which can be executed at a single keypress.

A mate of mine writing a thesis has put such a routine together, jokingly called COMPILE. When he types X COMPILE *Protext* asks him for a keyword; it then searches all the files on that disc and copies any paragraphs containing that keyword into a new file. Another routine searches the new file for references and compiles a bibliography at the end.

He claims to have put together an otherwise unmodified paper in five minutes with this method. The paper was discontinuous, rambling and had no theme to it. No-one noticed.

Protext is available from Arnor on 0733 68909.

Rob Ainsley

QL corner

Antics

A friend recently received a copy of the ANT PC Emulator for the QL. Though advertised as available in November, it wasn't delivered until mid-January, four weeks after the cheque was cashed.

A preliminary test revealed that the ANT product is definitely NOT to be recommended. It is disappointingly slow, and while we tried it on a variety of PC programs, it ran very few of them successfully. We tried different hardware, but it made no difference. If we said this emulator didn't work at all, we would be being a bit unfair – but only just.

Adding insult to injury, the ANT package had no manual (other than a 4-page disk file), and was accompanied by a sheet admitting that the emulator "still contained quite a few problems"! ANT went on to say that only "small" PC programs worked satisfactorily with it...

We tried to contact ANT for assistance, but to no avail – there is no phone number in its documentation or ads (or with the monthly they advertise in – we tried!) and BT have no record of ANT at all.

There is an alternative PC and MS-DOS Emulator from Digital Precision. *The Solution* costs £79.95 from them at **222 The Avenue, London E4 9SE** (tel: 01-527 5493). If you don't have a recent copy of MS-DOS, add £50 and Digital Precision will ship MS-DOS v4.0 and GW-Basic too.

Pipedreams Part 2

More on the dream computing system I've been thinking of... What if you could have a double co-ordinate system, serving both graphics and text characters, accessible both in pixels and in character units? Even better, if the graphics were in colour with switchable resolution, selectable scaling, variable origin and had optional turtle commands. It would be incredibly flexible if the two systems could be used side by side.

Imagine if the BASIC could be used to write perfectly structured programs while, unlike C, still providing interactive debugging and full error trapping, eliminating the need for dreadful GOTOs and GOSUBs and labyrinthine code by means of functions, procedures with local and global variables, REPEAT... UNTIL, select ON structures and versatile FOR.. END FOR logical ranging (FOR x=2, 3, TO 17 STEP 2,-4,PI) and multiple NEXT exits. The only advantage C would have over this BASIC would be the library function. But if this wonderful BASIC could be made user-extensible, so toolkit commands could be added at will, even that plus point would evaporate.

Alternative lifestyles

Microfairs are already dominated by QLs – there's hardly a Spectrum in sight. The second Alternative Micro Show, scheduled for April 1st (no kidding) at the New Horticultural Hall near London's Victoria Station, may go the same way. The first AMS, held at Aston Villa, was attended by Miracle, Digital Precision, Firsham and PDQL, and there were loads of bargains. Worth attending.

Eric Simmonds

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Violent opinions

This week my theme is Games; Do shoot-em-ups and beat-em-ups encourage violence? Or, is sexism in computers training a whole generation of young thugs? The question may seem trivial, the kind of thing dredged up by the tabloids in a dull moment, but I do believe there is a serious topic here which is never really addressed by the computer industry.

All these thoughts surfaced in my mind as I was blasting aliens to infinity in *Galaforce 2*, part of the latest release from Superior, *Play it Again Sam 6*.

This is an excellent example of the genre. It is fast, furious, mindless, and totally violent,but in a very abstract kind of way.

Now I don't believe that games such as *Galaforce 2* encourage actual violence, and even the beat-em-ups like *The Last Ninja* are not too harmful; *in themselves*.

But I do believe that the overwhelming preponderance of such themes in the games world does encourage an attitude that tolerates such violence in the real world.

Sexist software

Secondly, most computer games almost totally exclude of women, both in terms of plot and characters. This is bad, because girls, who let's face it are half of the population, are often put off computers at a very early age.

Few, if any computer companies take account of the different way of thinking that women have; they tend to be more 'intuitive', as opposed to the coldly 'logical' male. So my tip, and plea, this month goes out to all you male programmers out there. Think of women when you are writing your program, and do your bit to make the world that little better a place. After all, the BBC is the thinking person's computer.

Andrew Brown

Play It Again Sam 6

A quick review of this new compilation from Superior is in order. As mentioned above,* Galaforce 2 *is fast – mind-blowingly fast – particularly on the* Master 128*, where sometimes the aliens are coming at you so quickly they are just a blur.

It is, however, very playable – more so than* Galaforce 1 *– and even I managed Advanced Pilot level in reasonable time.

The scenario is the same as before but with some added elements such as collectable capsules which can give help, or hindrance. Also, you can select your starting galaxy from the sixteen available, assuming you have already reached that point.

Of the other games,* Sentinel *will need no introduction, being ranked up with* Elite *as one of the best games EVER, and* Hunchback *is a real bonus for* Electron *users, being new to that machine.

Together with* Hopper *(the original Acornsoft implementation, not Superior's copy), this is a 100 octane compilation, and well worth the money.

MSXTRA

Budget classic

Rally-X is from Bug Byte's Arcade Classics series, price £1.99. The game is a direct conversion of the Capcom arcade game, and is one of the most authentic conversions of an arcade game I have yet seen on an MSX.

If you can't remember the game, let me give your memory a little jog. You guide a little racing car around a maze which is viewed from above. There are flags scattered around the maze which you have to collect, while on your tail red cars try to prevent you clearing the maze. When a red car appears behind you, press the fire button and smoke belches out of your tailpipe to send it into a spin.

You have a radar screen to the right of the playing area which shows you the position of the flags and hostile cars. Clear a screen, and a harder maze appears, with an increased number of red cars to contend with.

For a £1.99 game *Rally-X* plays brilliantly. It starts a little slower than the arcade version I think, but the scrolling and the gameplay are spot on. Even the sound effects are good. The game might be a little too simple for the older MSXer, but is ideal for the younger games player. I have often thought that most software is aimed at too high an age group, and is far too hard for the younger user. This type of game is fun for all ages, and is highly recommended.

Vera Cruz tips

- ***Look in the shadows in part 1 for objects***
- ***Press "INS" over the notebook in Cruz's bag, then press it again to open the book***
- ***Look under her left hand fingernails for a small clue***
- ***Ask for statements from Nadine, the caretaker (Simon Duplat) and the bar keeper at the Bar of Poplars***
- ***The car's registration is 9111 CD 6 9***

Error checking

Just before Christmas, a friend of mine purchased a few Mastertronic budget games. One of these was *Master Chess*.

"How are you getting on with *Master Chess*?" I enquired.

"Quite well." he replied, "At least I'm winning."

"You do realise the game is seriously bugged?" I said.

He looked at me disbelievingly and carried on playing. Within a short while he had the Black's king in check. It was removed from the board and Black kept on playing!

"Carry on," I said, "let's see what happens."

He proceeded to clear all the black pieces off the board, whereupon the program claimed they'd reached a stalemate and asked if he wanted another game!

I told Mastertronic a year ago that this game was unplayable (on the JVC and Toshiba, at any rate), yet the bugs are still there.

If you are looking for a good chess program for the MSX, go for *Colossus 4 Chess* from CDS or *The Chess Game* from Aackosoft.

Keith Neal

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Issue 1: Future of computing, PC graphics, revival of Basic, Xmas games
Issue 2: Which computer?, the perfect wordprocessor, Konix console
Issue 3: Portable computing, Alan Sugar profile part I, yuppie software
Issue 4: Sega's16-bit console, best value PC, games that change your life
Issue 5: PC 200 fiasco, DTP guide, computer art, Unix explained
Issue 6: MGT Coupe, careers in computing, Realtime profile, cracking
Issue 7/8: Best games of '88, review of the year, look forward to '89
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Atari DTP system - includes Mega ST4, mono monitor, SLM804 laser printer, 30Mb hard disk, 'Fleet Street Publisher' software and 90 days on site maintenance	£2795.00
5.25" External drive 40/80 track 360/720K formatted capacity	£159.95
Pace Linnet Modem Pack inc.cable & software	£179.00
Pye 1185 15" FST teletext remote ctrl TV/Monitor c/w ST or Amiga cable	£269.00
Philips CM8833 colour monitor c/w ST or Amiga cable	£229.00
Philips CM8852 as above, higher resolution	£299.00
Cameron Handy Mouse, high quality replacement ST mouse	£39.95

commodore hardware

SPECIAL OFFER AMIGA PACK

A new Amiga 500 package including the following: (extras worth over £270)

- ★ Amiga 500 computer
- ★ TV Modulator
- ★ Mouse & Mouse mat
- ★ Joystick
- ★ Las Vegas
- ★ Photon Paint
- ★ Karate Kid II
- ★ Goldrunner
- ★ XR 35
- ★ Grid Start
- ★ Demolition
- ★ Atax
- ★ *plus* 5 disks of public domain s/ware

all for only £399.00

Oceanic OC-118 64/128 disk drive for 64/128 with free GEOS software	£129.95
Oceanic OC-118 as above with Freeze Machine	£149.95
Freeze Machine complete backup cartridge, with integral reset button	£28.95
LC-10 commodore 64/128 ready printer inc. 2 extra black ribbons free	£199.00
LC-10 7-colour version of above printer inc. 2 extra black ribbons	£249.00

Amiga & ST 3.5" Drives

- ★ Very Quiet
- ★ Slimline Styling
- ★ Fully Compatible
- ★ Top quality Citizen drive mechanism
- ★ On/Off switch for Amiga
- ★ External plug-in PSU for ST
- ★ Throughport for Amiga
- ★ 1Mb unformatted capacity

Fully compatible, high quality 3.5" external drives for the ST and Amiga

Amiga version only £79.95

Atari ST version only £82.95

Prices include VAT & delivery

Western Digital Filecards

Upgrading your PC to hard disk? Look no further, we offer the best prices on top quality hardcards. Thorough documentation supplied, low power consumption, with free XTree file management software and Speedread. For Amstrad PC1512/1640 users we supply hardcards tested and formatted, with our simple software installation procedure. The best packages available!

20 MEG...£229.00 **32 MEG...£249.00**

DISECTOR ST V4

for all Atari ST models only £24.95

New Version 4 disk utilities for the ST, features include: **protected software backup**, featuring the new **turbo nibbler**, a *faster and more powerful* copier, which uses all available drives & memory and includes 56 parameter options for handling a greater range of software; **drive B boot** to allow many programs to startup from drive B; **organiser accessory** providing many major disk management commands; **extra format** giving over *15% extra* user storage area per floppy disk; **fast backup; ramdisk accessory**; **undelete file**; PLUS many more!

3.5" disks

10...£11.95 in plastic case £13.95
25...£27.95 in 40 cap case £34.95
Fully guaranteed double sided media

5.25" disks

25...£13.95 in 50 cap box £22.95
in 100 cap box £24.95
Fully guaranteed double sided media

Amstrad PC1512/1640/2086

We offer a wide choice of Amstrad PCs with many upgrade options, including the very latest PC2086 range. For the hard disk option, check our 'Evesham Upgraded Models'. Only the best will do - so we normally upgrade by means of a Western Digital Filecard, which includes XTree and SpeedRead software; however on single drive 1512/1640 models we can offer internal installations at the same price (leaving more expansion room but no upgrade opportunity for a 2nd floppy drive). We can provide on-site service contracts at time of purchase - please 'phone for details. Prices in lighter type exclude VAT.

Free with 1512 models... Ability and 4 US Gold Games

	SD	DD	AMS H.D.	SD 20MEG	DD 20MEG	SD 32MEG	DD 32MEG
				EVESHAM UPGRADED MODELS			
MONO 1512	384.35 **442.00**	477.39 **549.00**	N/A **N/A**	583.48 **671.00**	676.52 **778.00**	600.87 **691.00**	693.91 **798.00**
COLOUR 1512	494.78 **569.00**	555.65 **639.00**	N/A **N/A**	693.91 **798.00**	754.78 **868.00**	711.30 **818.00**	772.17 **888.00**
MONO 1640	474.78 **546.00**	555.65 **639.00**	738.26 **849.00**	673.91 **775.00**	754.78 **868.00**	691.30 **795.00**	772.17 **888.00**
CGA (COLOUR) 1640	581.74 **669.00**	651.30 **749.00**	825.22 **949.00**	780.87 **898.00**	850.44 **978.00**	798.26 **918.00**	867.83 **998.00**
EGA (ECD) 1640	677.39 **779.00**	738.26 **849.00**	938.26 **1079.00**	876.52 **1008.00**	937.39 **1078.00**	893.91 **1028.00**	954.78 **1098.00**
2086 MONO	578.26 **665.00**	686.96 **790.00**	917.39 **1055.00**	777.39 **894.00**	886.09 **1019.00**	794.78 **914.00**	903.48 **1039.00**
2086 CD	717.39 **825.00**	825.22 **949.00**	1056.52 **1215.00**	916.52 **1054.00**	1024.35 **1178.00**	933.91 **1074.00**	1041.74 **1198.00**
2086 12" HRCD	808.70 **930.00**	920.00 **1058.00**	1147.83 **1320.00**	1007.83 **1159.00**	1119.13 **1287.00**	1025.22 **1179.00**	1136.52 **1307.00**
2086 14" HRCD	900.87 **1036.00**	1012.17 **1164.00**	1241.74 **1428.00**	1100.00 **1265.00**	1211.30 **1393.00**	1117.39 **1285.00**	1228.70 **1413.00**

PC1640 Summer Promotion Pack

Includes PC1640 DD with mono monitor, DMP4000 printer and software pack inc. Wordstar 1512, Supercalc 3.1 and Accounts Master DD .... **£899.00 inc.VAT**

optional extras

3.5 inch drive (720K) for any single drive models	£89.95
Maths Co-processor 8087-2	£139.00
Amstrad Modem Card V21/23	£99.00
Amstrad MC2400 Modem Card	£199.00
1512 memory upgrade to 640K	£39.95
NEC V30 (8086 replacement)	£24.95
Cipher CT1525 tape streamer	£319.00
Joystick & Controller Card self centering analog type	£34.95

Amstrad PPCs

Low prices on all portable PCs - especially twin drive models
prices in brackets are excluding VAT

PPC512S	(£373.04)	£429.00
PPC512D	(£433.91)	£499.00
PPC640S	(£477.39)	£549.00
PPC640D	(£546.96)	£629.00

New low price *External* 3.5" floppy drive (720K) to suit *ANY* Amstrad 1512/1640 inc. DD and HD models! Uses no expansion slots £99.95

Central Point Software

For all your PC disk management requirements

***PC Tools Deluxe*................**Other utililities may claim to 'do it all' but only PC Tools Deluxe is the complete disk utility package, providing a fast hard disk backup, the best undelete available, 100% safe formatting of floppy and hard disks, unformat, reliable disk caching, compress facility, in fact everything required to manage & protect your data at a sensible price..................**£49.95**

***Copy II PC Version 5*........**The most effective floppy disk backup utility of it's type. We always ship the latest version. Can also transfer many programs to hard disk and then run them without reference to floppy. Supports both 5.25" and 3.5" disk format. Don't be without it..................**£24.95**

***Copy II Deluxe Option Board*.....**The ultimate solution to backing up copy-protected software using the hardware option. All the original features of the Option Board, including the most powerful backup copier product on the market, and can even transform any PC equipped with a 3.5" drive into a dual purpose IBM/Macintosh drive. Allows your PC to read and write to MAC data disks easily through DOS. Comes as an easy-to-fit short card..............................**£84.95**

PRINTERS

All prices include VAT, delivery and cable

star

We use and recommend Star printers since they do offer an unbeatable combination of features. print quality. reliability and value. Make the sensible decision - get it right with a Star printer at our special. all in. prices.

Star LC10 best-selling 144/36cps printer, 4 NLQ fonts, inc.2 extra ribbons free	£199.00
Star LC10 7-colour version of above printer, inc.2 extra black ribbons	£249.00
Star LC24-10 feature-packed multifont 24 pin printer	£339.00
Star NB24-10 great value 24pin inc. cut sheet feeder + 2 extra ribbons	£499.00
Star NX-15 budget wide carriage printer	£329.00
Star NB24-15 wide carr.version of NB24-10 inc. cut sheet feeder	£649.00
NEC P2200 budget 24pin, great value 168/56 cps	£319.00
Amstrad DMP3250DI good value 10" with serial/parallel interfaces	£189.00
Panasonic KXP1081 reliable budget 10" printer 120/24 cps	£169.00
Panasonic KXP1124 great new sturdy 10" multifont 24pin printer	£319.00
Epson LX800 popular 10" 180/25 cps	£199.00
Epson LQ500 good 24pin printer 150/50 cps	£319.00
Citizen 120D good value 10" 120 cps	£139.00
Citizen HQP-45 wide carriage 24pin printer - a bargain	£399.00

How to order

All prices VAT/delivery inclusive
Next day delivery £5.00 extra
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Govt., educ. & PLC official orders welcome
All goods subject to availability E.&O.E.
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Evesham Micros Ltd
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Evesham
Worcs WR11 4SF
Tel: 0386 765500

Also at: 1762 Pershore Rd., Cotteridge, Birmingham, B30 3BH Tel: 021 458 4564

PSsst!

That old rogue Private I has transformed himself (or herself, could be a woman) into an Agony Aunt

A PROBLEM SHARED...

...is an embarrassment paraded. Having difficulties with your machine or company? Then write to PSsst! today. Our motto: satisfaction guaranteed and anonymity preserved – sometimes.

Our company is experiencing a little local difficulty with the tax office, to the tune of $74.1 million. Will it put us out of business?

Concerned of Maidenhead, Bucks

• Well Commodore, you have two alternatives. You can go into full headless chicken mode and scrabble about closing this or that important department. Sports sponsorship might be a useful starting point. Whatever, you should always been seen to be Doing Something, even if it's just going through the motions of putting in a counter-claim.

Alternatively, you can do what all US firms do in such circumstances: slap a writ for damages on somebody else and trust that in the subsequent furore everyone will forget the tax claim. Your best bet is to have a pop at Atari. It's always up for a spot of publicity and who knows, it might even collude with you.

I'm at my wits' ends. For the past six months I've been trying to connect my MSX -

(Handwriting illegible, postmarked Lincoln)

• No offence, old heart, but your problem goes deeper than you think. Forget your connection and better still, forget your MSX. It's a demonstrable fact that anyone with an MSX sooner or later is compelled to believe that an international conspiracy prevented the MSX standard from ruling the world. The diseased idea will take hold of you until you break out in a rash of letter-writing to publications whose editors are all fully paid up members of the conspiracy.

Kick the habit now.

We're a bit late with the latest version of our product. Worse than that, we've intimated that we'll be launching it several times in the past, only to miss the boat. How can we now release it with credibility?

Anon.

• Lotus, it's simple. Just bang on about the many thousands of man years it takes to produce the definitive software package. Weigh in with the Responsible Company angle: that you always want to do the very best possible for all your users. Hit 'em with a load of blurb about Major Technological Breakthroughs like *1-2-3* Version 3 not happening overnight. Pump up one of those striped shirt advertising whizzes to contrive a pseudo-sophisticated tagline such as "The everyday can happen tomorrow. Perfection takes just a little longer..."

Then the clincher: the bewildering trade-up scheme. You know the sort of thing – Version 1 users who bought when there was an R in the month can have it for tuppence, provided they buy before in the first six weeks; Version 2 owners can join the Special Accelerated Purchase Scheme, etc etc. That'll give your chums in the press something other than delays to witter on about.

Please help me. I think I'm becoming addicted to hype. Just like all the others, I thought I could handle it. I'd just try it once, just for the experience. Everyone else in the computer market was doing it, so why shouldn't I? But now I'm hooked. I just can't stop having these amazing fantasies about machines, and really can't distinguish between dreams and reality. You're my last hope.

J Tramiel, Sunnyvale, California

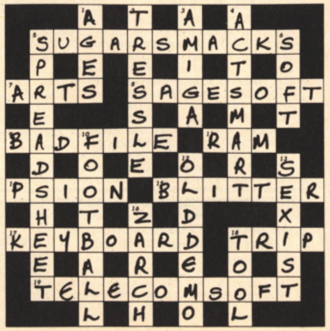
• Jack, you've just got to stop. Easier to say than do, I know. But you've got to start actually launching some machines rather than just talking about them. Start with the ST Console: work it out of your system. Then move on to the ST Plus. Who knows? You might even get round to launching your strange CD Rom device.

But you've also got to watch these ST shortages. You're now having fantasies about products not existing. Every year, you say that STs will be in short supply. But Jack, the consumer is wising up to you.

The choice is yours.

That crossword solution in full

In reponse to the multitude of phone calls and letters, here are the answers to last week's crossword. And no, there aren't any prizes. New readers should study the answers and work out the questions. They won't be getting any prizes either.



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Shoot from the Lip... *the week's most quotable sayings*

"I'd much rather we didn't talk about this as a split. That's a loaded word which implies dissatisfaction and unhappiness. I'd rather describe it as the natural evolution of two companies."

Electronic Arts' senior vice president Tim Mott, on the split with Accolade.

"In the future, the marketplace for scanners will be as large as that for joysticks."

Cameron Macsween, eponymous boss of Cameron which – inevitably – makes scanners.

"The promoters of desktop publishing have a lot to answer for. They have led many to believe that mere possession of a sophisticated software package will transform their lives. The truth is the barrage of hype has led to many disappointed buyers."

Computer columnist David Tebbut on the empty DTP dreams.

"I'm not saying you can run a multi million pound company on QLs or CPCs but for a one man band – which most small businesses are – they're ideal."

CPC and QL business software specialist Steve Denton.

"These three day training sessions aren't much good. They're far too intense; you come away punch drunk."

One to one computer trainer Tony Reese.

NEXT WEEK

The crucial consumer

Buying software or hardware? Don't get caught out! Express reveals the smart ways to do your computer shopping

Amiga BASICs

Which is the best for you? HiSoft and GFA's new offerings on test

Unfair advantages?

The student who took his English exams on a PC

Machine specifics

More news and views in another column specifically for your computer

PLUS

More lively letters, beginners' section, tech tips, reviews, previews, latest news – and the winners of the Express Christmas competition!

On sale Thursday January 26th Don't miss it!

Only 48p!

520ST-FM SUPER PACK

1Mb DISK DRIVE
£450 OF SOFTWARE

ARCADE GAMES

Arkanoid II	Imagine	£19.95
Beyond The Ice Palace	Elite	£19.95
Black Lamp	Firebird	£19.95
Buggy Boy	Elite	£19.95
Chopper X	Mastertronic	£9.99
Ikari Warriors	Elite	£14.95
Marble Madness	Electronic Arts	£24.95
Quadralien	Logotron	£19.95
Ranarama	Hewson Consultants	£19.95
Return To Genesis	Firebird	£19.95
Roadwars	Melbourne House	£19.95
Starquake	Mandarin	£19.95
Test Drive	Electronic Arts	£24.95
Thrust	Firebird	£9.95
Thundercats	Elite	£19.95
Wizball	Ocean	£19.95
Xenon	Melbourne House	£19.95
Zynaps	Hewson Consultants	£19.99

SPORTS SIMULATIONS

Eddie Edwards Super Ski	Elite	£19.95
Seconds Out	Tynesoft	£19.95
Summer Olympiad '88	Tynesoft	£19.95

PRODUCTIVITY SOFTWARE

Organiser	Triangle Publishing	£49.95

JOYSTICK

Atari CX40 Joystick	Atari Corp	£4.99

FREE ATARI BUNDLE VALUE: £458.97

The Atari Super Pack is ideal for you if you want to get off to a flying start with the best in entertainment software. The Pack includes a 520ST-FM with ½Mb RAM, a built-in 1Mb disk drive, over £450 of top games and a joystick. If you buy the Super Pack at Silica Shop, we will add our own ST Starter Kit (worth over £200), Free Of Charge. Return the coupon for details.

£399 INCLUDING VAT

With SM124 mono monitor: £498 INC VAT With SC1224 colour monitor: £698 INC VAT

ATARI ST

ST COMPUTERS

The range of Atari ST computers offers something for everyone. From the games enthusiast who wants the challenge of the very best in arcade action, to the businessman who wants to make financial forecasts or faultless presentations. The ST offers high quality graphics, sound and speed for the gamer, whilst providing a fast, user friendly and affordable solution to business. The ST is now firmly established in the home environment and boasts a wealth of users in education, local government, television, and a variety of different businesses. Software for the range stretches to cover applications as diverse as ENTERTAINMENT, ACCOUNTS, ART, COMMUNICATIONS, COMPUTER AIDED DESIGN, DATABASES, DESKTOP PUBLISHING, EDUCATION, MUSIC, PROGRAMMING, SPREADSHEETS, WORD PROCESSING and more. For a full list of the software available, as well as details of the ST range, complete and return the coupon below.

All prices correct at the time of going to press. E&OE.

520ST-FM EXPLORER PACK

WITH BUILT-IN 1Mb DISK DRIVE

The value for money offered by the Atari ST range is reflected in the Explorer Pack featuring the 520ST-FM computer with 512K RAM. The 520ST-FM computer now comes with a built-in 1 Mb double sided disk drive as well as a free mouse controller and a built-in TV modulator. The new 520ST-FM Explorer Pack includes the 520ST-FM computer, the arcade game Ranarama, a tutorial program and some useful desktop accessories. In addition, if you buy the Explorer Pack from Silica, we will give you the Silica ST Starter Kit worth over £200, FREE OF CHARGE. Return the coupon for details of our Starter Kit and of the full ST range.

£260 +VAT= £299

ONLY £2.51 PER WEEK RETURN COUPON FOR DETAILS

+ SM124 mono monitor: £398 INC VAT + SC1224 colour monitor: £598 INC VAT

1040ST-FM PROFESSIONAL PACK

NOW WITH TV MODULATOR

For the serious home user and the small business, we are pleased to announce a new package based around the 1040ST-FM. The 1040ST-FM has 1Mbyte RAM and a 1Mbyte built-in disk drive. In addition, the 1040ST-FM now comes with a TV modulator built-in. (The previously available 1040ST-F was designed for use with a monitor only and did not come with a modulator.) This modulator allows the 1040ST-F to be plugged directly into any domestic TV set, and comes complete with a lead to allow you to do so. The new 'Professional Pack' from Silica includes the new 1040ST-FM with modulator plus four high quality software packages including a spreadsheet, database, word processor and programming language. This 'Professional Pack' software will enable you to get straight down to business with your new computer. In addition to this software (worth £384.84), if you buy the Professional Pack from Silica Shop, you will also receive the Silica ST Starter Kit (worth over £200), Free Of Charge. Return the coupon for further information.

£499 INCLUDING VAT

With SM124 mono monitor: £598 INC VAT
With SC1224 colour monitor: £798 INC VAT

ATARI 1040ST-FM	(Computer)	£499.99
VIP PROFESSIONAL	(Spreadsheet)	£149.95
MICROSOFT WRITE	(Word Processor)	£149.95
SUPERBASE PERSONAL	(Database)	£59.95
BASIC DISK & MANUAL	(Language)	£24.98
	NORMAL RRP:	£884.82
	LESS DISCOUNT:	-£385.82
	PROFESSIONAL PACK PRICE:	£499.00

2Mb & 4Mb MEGA ST

The MEGA ST computers are styled as as lightweight keyboard with a separate CPU, connected by a coiled telephone style cable. There are two versions of the MEGA ST, one with 2Mbytes of RAM and the other with 4Mbytes. Each version has a 1Mbyte double sided disk drive built-in to the CPU unit. The MEGA ST's do not come with modulator built-in and must therefore be used with a monitor. With every MEGA ST purchased, we will add the 'Professional Pack' software (worth £384.83) detailed above, plus the Silica ST Starter Kit (worth over £200) both Free Of Charge. Return the coupon for further details.

2Mb MEGA ST £899 INC VAT
+mono monitor=£998
+colour monitor=£1198

4Mb MEGA ST £1199 INC VAT
+mono monitor=£1298
+colour monitor=£1498

WHY SILICA SHOP?

Before you decide when to buy your new Atari ST computer, we suggest you consider very carefully WHERE you buy it. There are MANY companies who can offer you a computer, a few peripherals and the top ten selling titles. There are FEWER companies who can offer a wide range of products for your computer and expert advice and help when you need it. There is ONLY ONE company who can provide the largest range of Atari ST related products in the UK, a full time Atari ST specialist technical helpline and in-depth after sales support, including free newsletters and brochures delivered to your door for as long as you require after you purchase your computer. That one company is Silica Shop. We have been established in the home computer field for ten years with an annual turnover in excess of £8 million and can now claim to meet our customers requirements with an accuracy and understanding which is second to none. But don't just take our word for it. Complete and return the coupon below for our latest literature and begin to experience the Silica Shop specialist Atari service.

SILICA STARTER KIT: Worth over £200, FREE with every Atari ST computer bought from Silica.

PROFESSIONAL PACK: Free business software with 1040ST-FM and MEGA ST's bought from Silica.

DEDICATED SERVICING: 7 full-time Atari trained staff with years of experience on Atari servicing.

THE FULL STOCK RANGE: All of your Atari requirements from one place.

AFTER SALES SUPPORT: The staff at Silica are dedicated to help you get the best from your ST.

FREE CATALOGUES: Mailed direct to your home as soon as we print them, featuring offers as well as all of the new releases.

FREE OVERNIGHT DELIVERY: On all hardware orders shipped within the UK mainland.

PRICE MATCH PROMISE: We will match competitors on a 'same product same price' basis.

FREE TECHNICAL HELPLINE: Full time team of Atari technical experts always at your service.

FREE SILICA STARTER KIT WORTH OVER £200
WITH EVERY ST - RETURN COUPON FOR DETAILS
ALL PRICES QUOTED INCLUDE FREE UK DELIVERY

DTP PageStream £149 +VAT =£171.35

Desktop Publishing (DTP) is one of the fastest growing applications for personal computers. We are pleased to announce a powerful low cost package for the Atari ST called PageStream. PageStream costs only £149 (+VAT=£171.35) and, because it works with an Atari 1040ST and a Seikosha SP-180AI printer, you can be up and running with a complete system for less than £1000. Some of the features of PageStream are listed to the right. If you would like further information on this program, complete and return the coupon below, ticking the 'DTP' box in the corner.

* TEXT-FLOW AROUND GRAPHICS
* ROTATION OF TEXT & GRAPHICS
* SLANT OR TWIST ANY OBJECT
* POSTSCRIPT COMPATIBLE
* TAG FUNCTION
* AUTO/MANUAL KERNING & HYPHENATION
* GROUPING OF OBJECTS

DO YOU OWN AN ATARI ST?

If you already own an Atari ST computer and would like to be registered on our mailing list as an ST user, let us know. We will be pleased to send you copies of our price lists and newsletters FREE OF CHARGE as they become available. Complete the coupon and return it to our Sidcup branch and begin experiencing a specialist ST service that is second to none.

SILICA SHOP:

SIDCUP (& Mail Order) 01-309 1111
1-4 The Mews, Hatherley Road, Sidcup, Kent, DA14 4DX
OPEN: MON-SAT 9am - 5.30pm LATE NIGHT: FRIDAY 9am - 7pm

LONDON 01-580 4000
52 Tottenham Court Road, London, W1P OBA
OPEN: MON-SAT 9.30am - 6.00pm LATE NIGHT: NONE

LONDON 01-629 1234 ext 3914
Selfridges (1st floor), Oxford Street, London, W1A 1AB
OPEN: MON-SAT 9am - 6.00pm LATE NIGHT: THURSDAY 9am - 8pm

To: Silica Shop Ltd, Dept NCE 1288, 1-4 The Mews, Hatherley Road, Sidcup, Kent, DA14 4DX

PLEASE SEND FREE LITERATURE ON THE ATARI ST

Mr/Mrs/Ms: .... Initials: .... Surname: ....

Address: ....

....

....

.... Postcode: ....

Do you already own a computer
If so, which one do you own? .... DTP ☐